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## GUIDELINES FOR PUBLICATION

1) All articles intended for publication should be submitted to the editors before the deadline which is usually six weeks before the release of the Journal
2) Submitted articles should be typed (or legibly printed) double-spaced, single-sided on paper 8½" x 11" (letter size) and they should not be more than 15 to 20 pages (3000 to 4000 words)
3) Illustrations, graphs, diagrams and figures should be put on a separate sheet and identified by Arabic numerals. A list of explanatory legends for all the figures and diagrams should be put on another sheet. Do not write on the back of photographs
4) References should be checked with the original sources, designated by Arabic numerals in the text, numbered in order of appearance and put on a separate sheet. Each periodical reference should include in order the author's name and initials, title of the article, Journal name, volume number, page number and year (eg. 1. Rosen HJ. Lumbar intervertebral disc surgery: review of 300 cases. *Can. Med. Assoc. J.* 101: 317, 1969.)
5) The editors reserve the right to make such editorial changes as are deemed necessary to ensure correctness of grammar and spelling, clarification of statements and conformity to Journal style
6) Acceptance for publication is subject to the understanding that such material is submitted solely to the Journal and will not be reprinted without the consent of both the editors and author

# The Hall Report: Perceiving A Threat To The Standards Of Medicare

*The achievement of the highest possible health standards for all our people must become a primary objective of national policy . . . This objective can best be achieved through a comprehensive, universal Health Services Program for the Canadian people . . . to attain the highest possible levels of physical and mental well-being.*

So stated a salient excerpt from *The Health Charter for Canada*, the landmark report submitted in 1964 to the Canadian Government by the Royal Commission on Health Services. Under the chairmanship of Emmett M. Hall (then a Justice of the Supreme Court of Canada), the Royal Commission's investigations and recommendations led to the establishment of universal provincial health insurance programs. Sixteen years later, with the quality of health care, and the economics of its delivery, contentious issues on a nation-wide scale, Mr. Justice Emmett Hall has again become the focus of public attention.

This past August, he released his report for Health Services Review '79, entitled "Canada's National = Provincial Health Program for the 1980s—'A Commitment for Renewal' " (commonly known as "the Hall Report")—the culmination of a year-long investigation. As a travelling one-man Commission, Mr. Hall studied more than 450 briefs on health issues, including 170 submitted at public hearings in 13 cities across Canada.

Aptly dubbed "the Father of Medicare" in Canada, Mr. Hall leaves no doubt about his continued commitment to a nation-wide system of prepaid health services that fulfills the major objectives set by the Royal Commission, and enacted by the 1957 *Hospital Insurance and Diagnostic Services Act* and the 1966 *Medical Care Act*. These "national standards" are: comprehensiveness of care, universality of coverage, accessibility of services (on uniform terms and conditions), portability of benefits, and public administration.

Health, notes Mr. Hall, is the "number one issue of concern" among Canadians, as reported by a recent public survey. Intent on upgrading the health care system, Mr. Hall proposes a broad range of reformist and reparative measures which, by and large, are worthy of support. His prime concern, however, is the preservation of the national standards of Medicare. Space constraints require me to forego discussion of the other aspects of his Report, and to focus on what he describes as the "dominant issues' in the Medicare system today. The recommendations he makes to deal with these issues have, no doubt, proven to be the most controversial.

## The "Dominant Issues"

Mr. Hall states that the two issues which dominated the public hearings were: the practice of extra-billing by physicians, and the conflict between the Provinces and the medical profession over physicians' remuneration. The profession, he reports, staunchly defends its right to set its own fee structure for doctor's services. The Provincial Governments insist on their right to unilaterally fix physicians' fees, in the absence of an agreement with the profession. These two positions, says Mr. Hall, are "totally in conflict. They cannot co-exist."

Mr. Hall contends that the medical profession cannot be a "law unto itself" in fixing fees for its services. He recalls the reasoning of the 1964 Royal Commission:

> ...The freedom to practice should not obscure the fact that the physician is not only a professional person but also a citizen. He has moral and social obligations. . . That the physician has an absolute right to fix his fees as he sees fit is incorrect, and unrelated to the mores of our times. . .

At the same time, Mr. Hall unequivocally rejects the right of the State to "conscript" physicians. But in addressing the allegation that the government, in attempting to enforce accessibility to a universal Medicare system, may invoke the element of "compulsion", he again quotes the Royal Commission:

> [This issue] lies at the roots of our democratic system. . . Society, in its collective judgement, has found it necessary to use the force of law to achieve a number of socially desirable objectives. . .

As an example, Mr. Hall cites the collective desirability of compulsory public education, and analogously, of Medicare. Referring to physicians' services, Mr. Hall furthermore recalls:

> . . . When the State grants a monopoly to an exclusive group to render an indispensable service, it automatically becomes involved in whether those services are available, and on what terms and conditions.

Where society's interests may conflict with physicians' interests is in the effect of extra-billing on patients' accessibility to medical care on uniform terms and conditions. For the Report, Mr. Hall commissioned a study by Stoddart and Woodward, which surveyed the households of 4 Ontario counties with a relatively high proportion of opted-out general practitioners. The survey found that when extra-billed, the poor were more likely to reduce or delay utilization of medical services because of cost, to indicate "financial problems" caused by the cost of these services, and to express less satisfaction with the quality of care, compared to the non-poor. (Mr. Hall did not mention how "poor" and "non-poor" were defined in this study.)

Mr. Hall concludes that extra-billing "violates the principle of accessibility to all", and is contrary to the spirit of the 1964 *Health Charter*, and the 1966 *Medical Care Act*. This is indeed so, if one believes that any individual's access to a uniform standard of health care should not depend on his or her income or financial assets. As Mr. Hall puts it, a prepaid, universal health insurance plan obviates the need for "means-testing" patients, which unjustly exacts an additional burden on those who have already paid into the system through their taxes and premiums.

In time, asserts Mr. Hall, extra-billing will lead to a "two-tiered system" of medical services, which would discriminate against those on low incomes. At present, for example, some physicians are simultaneously "opted-in" at hospital outpatient clinics and "opted-out" in their private offices (where more personalized, continuous care is encouraged). In addition, studies in Saskatchewan have shown that an imposition of deterrent fees would result in decreased volume of physician's services to the poor. Studies in Ontario have shown that, with a lower volume of patients (as some are deterred by extra charges), some opted-out physicians generate a compensatory increase in income by providing more expensive and/or "optional" services to patients—a practice that tends to inflate total health costs. Moreover, with certain regions having a high proportion of opted-out GPs or specialists, there results an unequal geographic distribution of health costs, since patients in these areas must pay a surcharge for services totally covered for residents of other regions.

Thus Mr. Hall makes his first point: *"I reject the concept of extra-billing"*, proposing an accordant amendment to the *Medical Care Act*. At the same time, Mr. Hall justifies the use of legislation to abrogate the 1962 *Saskatoon Agreement*, which granted Saskatchewan doctors the right to opt out and extra-bill (following their 1962 strike). Physicians in other provinces have cited the Agreement as a pretext for their right to also opt out. Mr. Hall argues that the importance of a universal Medicare program truly nation-wide in character now overrides the right of Saskatchewan doctors to opt out.

Mr. Hall describes, but does not specifically advocate, the method presently operant in Quebec which greatly discourages opting-out: a physician may practise entirely outside the system, but his patients will not be reimbursed by Medicare benefits. This method is preferable to alternative suggestions of prohibiting opting-out by specific legislation, or denying the use of publicly-funded hospital facilities to opted-out doctors.

Mr. Hall, however, concurrently emphasizes his second point: *"I reject totally the idea that physicians must accept what any given Province may decide unilaterally to pay."* How, then, to resolve an impasse in government - physician fee negotiations? Mr. Hall recommends binding arbitration—the *"arbitration board consisting of 3 persons: an independent chairperson to be named by the [Province's] chief justice, one nominee from the Profession, and one from the Government."* The Provincial Cabinet would not be able to appeal or rescind the arbitrated decision. "What is needed here is finality," explains Mr. Hall, depicting a scenario of withdrawal of services by physicians, or their outright conscription, that a breakdown in negotiations might precipitate. He feels that binding arbitration is analogous to the Courts of Law, "whose judgements. . . are civilized society's substitute for the resort to naked force" in setting what is just. Whether a decision is "just", of course, depends on its terms.

Anticipating this, Mr. Hall declares: *"The real point is the right of physicians to be adequately compensated for their services: no more, no less."* He insists that "reasonable compensation" must be linked to any prohibition of extra-billing and enactment of binding arbitration. Mr. Hall, however, avoids quantifying what "reasonable" or "adequate" mean, explaining that this matter is up to the negotiations, and differing costs of practice and costs of living, in individual provinces. One gets the impression, however, that he feels the present average net income for physicians *is* about "adequate". Doctors still comprise the highest-paid professional group in Canada. (Depending on which year is set as the baseline for comparison, the proportionate rise in physicians' incomes can be shown to have outstripped, kept pace with, or fallen behind, that of other professionals, or the wage/salary composite average.) Conceding that the overall trend in incomes *has* been a relative "catching up" of other occupations with physicians, Mr. Hall correctly notes that this is fair, as the ever-increasing cost-of-living bears more heavily on those with lower incomes.

## Reaction and Rebuttal

The Medical Associations have been vehement in their opposition to Mr. Hall's proposed methods to resolve the "dominant issues". At the Annual Meeting of the Canadian Medical Association, two weeks after the Report's release, President D. Laurence Wilson charged that a ban on opting-out would turn a physician into "a government-retained dependent contractor—a *de facto* civil servant." In the CMA position

(continued on page 71)

# Psychiatric Training In The Emergency Service: The Need For Change

*G. Voineskos M.D., D.P.M., M.R.C.Psych., F.R.C.P.(C)

*The increasing utilization of the emergency department by the public has led to a major shift in the practice of hospital psychiatry. The psychiatric emergency service, which is now a component of the emergency department of teaching hospitals in Canada and the U.S., occupies a central position in the psychiatric care delivery system. Consequently this service offers unique opportunities for training of medical students, interns and residents. However, factors pertaining to tradition and to the nature of emergency work make training less than optimal. Suggestions which will improve training are offered.*

From a single room where accident cases used to be taken for first aid before World War II, the emergency room has now developed into one of the busiest, most complex, labour-intensive and sophisticated hospital departments. Studies in Canada and the U.S. have shown that the pace of the increase in the use of the emergency department by the public has been greater than that of any of the other measures of hospital utilization, and well beyond that which could be explained by the population growth[1-8]. A survey of 90 hospitals in the U.S.[3] found a 400% increase in the emergency department visits from 1940 to 1955. The American Hospital Association[4] reported that, between 1954 and 1970, the number of visits to the emergency departments of community general hospitals had increased by 308%, and that these visits in 1970 amounted to one-third of all outpatient visits, or one visit per five people of the general population. Increases of a similar magnitude have been reported from several centres in Canada[1 7-9]. The annual increase in the emergency department volume is on the average 10%, with a range of 7 to 40%[1 2 6]

The rapid rise in the utilization of the hospital emergency room has been accompanied by a similar and often greater increase in the percentage of psychiatric emergency visits[10-13]. This situation is unlikely to change in the near future because the reasons for the upsurge in the utilization of the emergency department are numerous and complex. The major reasons are:

(1) many patients do not have a regular family physician[2 4]

(2) difficulty to find or diffidence to inconvenience the physician at night, on weekends and on holidays[1-4];

(3) use of the hospital emergency room by physicians as an "after hours office"[2];

(4) the emergency service functioning as "the poor man's doctor" for a variety of health problems[14];

(5) increasing use of the emergency department by patients with non-emergency problems[12 15 16];

(6) the public's view of the emergency room as a general treatment centre rather than a place to go to only in a real emergency[17], and the use as a family "drop-in clinic"[2];

(7) the traditional organization structure of the urban hospital in which regular outpatient clinics close intake by 5:00 p.m.[18];

(8) a heightened sensitivity on the part of physicians to emotional features of illness[19], and a redefinition of certain social problems, previously managed by the extended family, as belonging to the domain of 'mental health'[13];

(9) the lengthy waiting lists and the erection of complicated and forbidding intake procedures prompting those too sick or too impatient to wait for entry into psychiatric facilities to learn that easier access is available through the "back door" - the emergency service[13]; and

(10) the out-of-hospital emphasis in community mental health which has led to the presence in the community of large and increasing numbers of people who, being subject to acute and repetitive decompensation, appear in the emergency department.

The psychiatric emergency service has thus become the "semipermeable membrane" of the community mental health system[20].

The increased utilization of the emergency department by the public has led to a transformation of the patterns of referral to hospital psychiatric services. The psychiatric emergency service, which is now a component of the emergency department in teaching hospitals across North America, has become a major portal of entry of patients to psychiatric treatment services both

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inpatient and outpatient, occupying a central and pivotal position in the psychiatric care delivery system. As a consequence, the psychiatric emergency service offers unique opportunities for psychiatric training of medical students, and physicians in graduate and postgraduate training.

## Reasons For Training In The Psychiatric Emergency Service

Training in the psychiatric emergency service is important for all physicians and physicians-to-be for two reasons:

1) Learning to recognize, assess and manage psychiatric emergencies is essential for good medical, surgical and other clinical practice, and equally important to that of learning about other medical emergencies.

In their clinical work all physicians are bound to encounter patients with psychiatric emergencies. Most often patients with a psychiatric emergency are evaluated first by a non-psychiatric physician, whether they present in the office or in the hospital emergency department. Furthermore, patients with medical or surgical conditions are subject to developing psychiatric emergencies. While the majority of psychiatric emergency patients will or should be referred for a psychiatric consultation, the non-psychiatric physician should have sufficient knowledge and skills to recognize the nature of the emergency, evaluate the patient, and institute immediate medical intervention which may be required, before a psychiatric consultation is obtained.

2) The psychiatric emergency service is an unparalleled setting for the teaching and learning of psychiatry for interns, residents, medical students and students of other health professions.

The broad spectrum of psychiatric disorders, the large number of patients, their motivation in seeking and readiness in accepting help, the need for immediate assessment and action, and the complexities and extensive variety of human problems presenting to the psychiatric emergency service, all provide opportunities for psychiatric training which can not be easily matched by those offered by other psychiatric services.

Unlike the inpatient psychiatric service, the patients seen in the emergency department are more like those the medical student, intern or family practice resident will see later in clinical practice. The reason for this is that, at the time of presentation to the emergency department, the patient has not been labelled as a psychiatric patient. Even the presenting symptoms may not be readily identifiable as symptoms of a psychiatric disorder. Sometimes patients with psychiatric emergencies present as medical emergencies, leading to lengthy investigations. The converse also occurs, whereby medical conditions, prescribed medications and non-prescribed substances cause, or present as, psychiatric emergencies. More often, however, patients with psychiatric emergencies complain of physical symptoms. It is well established that there is a greater incidence of physical illness in psychiatric patients than in the general population[21 – 23] and, further, Browning et al[21] have reported that psychiatric emergency patients are at high risk for medical problems that are unrelated to their psychiatric condition. In the emergency service there is, therefore, opportunity for problem solving, a cornerstone principle of medical education[24], and for integration of knowledge and skills obtained from various subjects of the medical curriculum.

Rusk[25] has pointed out that the psychiatric emergency service offers a real rather than a contrived teaching situation. Whether it is planned to focus on interviewing techniques, clinical diagnosis, emergency drug treatment, psychodynamics, family dynamics, brief psychotherapy, the therapeutic alliance, the holistic approach, general systems theory or crisis intervention itself, the encounter with a patient and/or family in crisis presents a real situation in which diagnostic and therapeutic skills are taxed to the limit[25]. Werkman et al[26], in a survey of the views of medical students, reported that psychiatric clerks rated emergency and outpatient experience consistently the highest in usefulness for the practice of medicine, and inpatient work the lowest.

## Factors Impeding Training

Ten years ago Rusk remarked[26] that supervision and teaching in psychiatric emergencies were sadly neglected in most psychiatric residency programs and that training was viewed as a 'trial-by-fire'. Shortly before, Nemiah[27] had called for a reorganization of the structure, staffing and financing of emergency services so that residents may share in the activities without compromising their opportunity to learn. Since then some progress has been made in this regard but supervision and training are still hampered by insufficient staffing patterns and by the very nature of emergency work.

1) **The staffing of the psychiatric emergency service:** Traditionally the staffing of the psychiatric emergency service in teaching hospitals has been obtained through the rotation of psychiatric residents covering the emergency room for a 24 hour period or less. Staff psychiatrists have provided supervision either through rotation or on a part time basis[14 28 29]. This type of staffing is unsatisfactory.

Several authors report on the complaints of residents when they work on an "on-call" basis in the emergency department without adequate supervision, and with their major assignments elsewhere[27 29 30]. Emergency work, thus, for many residents becomes an interruption of the day, an intrusion into their schedule of teaching seminars, conferences, and patient appointments, and an onerous unrewarding duty which takes them away from other more interesting responsibilities[14 31 32]. When residents work in the psychiatric emergency service without sufficient control of their caseload, without time for reflection, and without adequate supervision or support, the anxiety and sense of helplessness they feel not only breed distaste for emergency psychiatry but also can create tensions that permeate the entire residency training program[27]. In some instances, the complaints of the residents have acted as an

impetus for changes in the organization of psychiatric emergency services[32 33].

Since psychiatric emergency services began to be organized systematically a little over two decades ago, there have been several advances in program development, including brief therapy units, crisis wards and the like. However, the most important development has been the assignment of permanent staff. It is now recognized, although by no means universally practised, that the psychiatric emergency service should be operated by a team of permanent staff. A permanent team can provide continuity in the operation of the service, mitigate negative attitudes and affects about emergency work, give proper supervision to the training of medical students, rotating interns and residents, and develop good working relationships with the other psychiatric services, the emergency department staff, and various community agencies[29 30 33]. Bartolucci and Drayer[34] suggest that it is desirable to weave the psychiatric emergency team into the texture of the general hospital's emergency room. Zusman[35] became a member of the emergency room staff in Coney Island Hospital. He reports that in addition to doing psychiatric consultations and brief psychotherapy, this arrangement afforded him the opportunity to influence the attitudes of the physicians and the non-medical staff of the emergency room toward psychiatry and psychiatric patients.

**2) The difference between day and night:** Approximately 50% of the psychiatric emergency patients appear outside the regular working hours of the week, i.e. after 5:00 p.m. and on the weekends[36 – 40]. However, the staffing of the psychiatric emergency service in teaching hospitals is markedly different during those hours. It is left to the psychiatric or sometimes family practice residents. Furthermore, it is still common to find a first year resident manning the psychiatric emergency service of a busy teaching hospital in the evening or weekend.

As a rule, first year psychiatric residents should not be assigned to the emergency service in the evenings and weekends, because adequate supervision is lacking in view of the fact that staff psychiatrists are not present in the hospital during these hours. A recent report from Hamilton, Ontario, outlines the beneficial effects of the deliberate exclusion of first year residents from emergency duty, until they had completed six months of training on an inpatient service[32]. Behan et al[30] report on their unsuccessful effort to persuade staff psychiatrists to participate in the evening emergency work. Only one report was found in the literature[32] describing that staff psychiatrists were physically present in the hospital after hours for the purpose of supervising residents in the psychiatric emergency service. There is usually, of course, a staff psychiatrist available on an on-call basis. Such a psychiatrist, however, is rarely called because of a prevailing ethos that the resident should be able to handle everything and/or that it is not nice to disturb the staff psychiatrist in the middle of the night. Therefore, at best, supervision is deferred for the following morning. While this may be appropriate in the supervision of other aspects of psychiatric training, for instance, long term psychotherapy, it is not proper in emergency psychiatry, either for patient care or for residents' training. In emergency psychiatry highly complex decisions have to be made, frequently on the basis of inadequate data, and without the opportunity for the prolonged reflection traditionally characteristic of psychiatric practice. Studies have shown an inverse relationship between the years of experience of the clinician and the percentage of patients hospitalized[41 42]. Baxter et al[42] found that a patient was more likely to be admitted to the hospital if he was evaluated by a first year resident rather than an advanced resident, and that their inexperience led first year residents to consider themselves as having greater insight into the patient's problems than did their advanced colleagues.

**3) The nature of emergency work:** Emergency work is much different from the rest of psychiatric practice. Psychiatric cases in an emergency department of a general hospital are not popular. At best they are tolerated[43 44]. Upon arrival the psychiatrist is likely to be the recipient of the negative affects and attitudes the emergency room staff often have about psychiatric patients[33]. For the psychiatrist, who usually works in an orderly fashion with predetermined appointments, the emergency is an intrusion[43]. Blajs and George have remarked that there are no polite telephone calls to secure an appointment, no detailed reports from helpful referring physicians or agencies and no waiting list, and have aptly suggested that this is "a rather egodystonic situation in our traditional ways of handling psychiatric problems"[43]. Furthermore, some patients come to the service under pressure, some are demanding and some are hostile and belligerent. The family, the police and others may be exerting similar pressures. Nemiah[27] has pointed out that dealing with acute psychiatric problems is in itself an anxiety provoking situation. Implementation of dispositional decisions can create additional anxiety because of the risks involved as, for example, when the patient is sent home, or can lead to feelings of frustration because of the frequent difficulty in finding a bed, particularly at night, when admission is required[45].

It is not surprising that it has been said that the senior and more prestigious psychiatric staff show disinterest in psychiatric emergency services[33]. Nevertheless, a change in attitude regarding the psychiatric emergency service as a teaching forum must begin with the institution and senior faculty; adequate faculty supervisors in both quantity and quality must be assigned to this service[25]. The supervisor should offer 'on-the-spot' supervision of the resident's work, should be available to observe while the resident, intern or medical student interviews, and should demonstrate attitudes and techniques by allowing the resident and other students to observe while he conducts the emergency interview[25 31].

## Conclusions and Suggestions for Improvement of Training

A major shift in the practice of hospital psychiatry has occurred through the development of

psychiatric emergency services and the unplanned, increasing utilization by the public of such services. In addition to the major role it now has in the psychiatric care delivery system, the psychiatric emergency service is a potentially major arena for training of psychiatric residents and others. Training, however, is impeded, and at times unpopular, as a result of factors some of which pertain to tradition and some of which are inherent in the nature of emergency work.

The following suggestions might aid in enhancing and making attractive the training in the psychiatric emergency service: (1) The service should be operated by a permanent, multidisciplinary team which should assume responsibility for the supervision of trainees. (2) Supervisors should be available in the hospital 'after hours' to offer supervision to the residents. In view of the fact that close to 90% of the psychiatric emergency visits occur between 9:00 a.m. and midnight[12 16 36–39 46 47], it should be possible to arrange such supervision between those hours in most teaching hospitals. (3) Where immediate supervision is lacking in the evenings and weekends, first year residents should not be assigned to the emergency service during those hours. (4) Supervision during day time or 'after hours' should take the form of the 'apprenticeship' model for beginning residents, interns or medical students, and of 'the consultee-centred case consultation model'[48] for more experienced residents. There should be at least one room with one-way mirror for viewing the trainee and also for the trainee to view the supervisor in action. (5) Finally, instead of benign disinterest, a more active interest in the psychiatric emergency service is required to be demonstrated by the senior psychiatric staff of the hospital. □


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(continued on page 51)

# Surgical Approach To The Osteoarthritic Knee

Emil Orsini 8T3

Brian Alpert 8T2

*Today, there are a number of surgical approaches in the management of the osteoarthritic knee. The objectives of this article are, first, to review the pathogenesis of osteoarthritis (O.A.), and then, to take you through the array of surgery available to the orthopaedic surgeon. Techniques for unicompartmental O.A. include debridement, osteotomy, or prosthesis for bot the tibiofemoral and patellofemoral subtypes, with realignment or patellectomy as alternatives for the latter subtype. Total knee replacement or arthrodesis are the choices for tricompartmental O.A. In general, the surgical procedure should offer pain relief and functional improvement. The success of a particular procedure will depend on appropriate patient selection, technical skills, and post-operative management. The operation should be conservative in nature, removing as little biological material as possible. If it should fail, a practical salvage procedure should be available.*

"Osteoarthritis has been referred to as the single major cause of disability in the population of the United States"[1]. The general practitioner, rheumatologist, orthopaedic surgeon and physiatrist are confronted with a medical condition for which there is no known method of arrest. Osteoarthritis (O.A.) is commonly referred to as wear-and-tear arthritis which accompanies old age. The patient with O.A. may be plagued with constant pain, joint deformity, limitation of motion, and most importantly, loss of independence.

Osteoarthritis, the commonest type of arthritis, is present in 85% of persons over the age of 70[1]. However, only 25% of women and 15% of men over the age of 65 have symptomatology related to degenerative joint disease (O.A.)[2]. Since the percentage of the geriatric population is increasing, and because the knee is more frequently affected by O.A. than any other joint, osteoarthritis of the knee is, and will be, a very contemporary problem.

The management of a patient with an osteoarthritic knee is initially conservative. The conservative measures are weight reduction, decreased activity, physiotherapy, supports (canes, braces), and medication. Surgery is considered once conservative steps have failed to control pain, progressive deformity and loss of function.

Although this paper refers specifically to O.A. of the knee, the same principles may be applied to O.A. of any joint.

## Classification of Osteoarthritis

*Primary:* idiopathic
(1) polyarticular;
(2) mono-articular
*Secondary:*
(1) trauma;
(2) infection;
(3) rheumatoid arthritis;
(4) neurogenic: syphilis, diabetes;
(5) crystal: gout, pseudogout;
(6) haemarthrosis;
(7) avascular necrosis;
(8) joint incongruity.

An alternative classification scheme is the following:

A) Decrease in biological resistance of tissue: *congruous* O.A. (i.e., idiopathic, sepsis).

B) Excessive localized joint pressure: *incongruous* O.A. (i.e., valgus deformity producing O.A. in the lateral compartment of the knee).

## Pathogenesis of Osteoarthritis

(I) Microscopic
(II) Macroscopic (biomechanical)

### I)Microscopic

The microscopic pathogenesis of O.A. involves an increase in stress on cartilage (physical, chemical or metabolic) sufficient to injure chondrocytes. In response, the chondrocytes release degradative enzymes which destroy cartilage matrix. A reparative process ensues, but it is unable to keep pace with the degradative process, resulting in net cartilage destruction and loss of elasticity. The subchondral bone will be subjected to more stress, resulting in microfractures of trabeculae. As a response, the subchondral bone becomes stiffer, due to repair of microfractures by callus, causing more force to be transmitted to the overlying articular cartilage. Hence, a vicious cycle is initiated.

### II)Macroscopic (Biomechanical)

The knee joint is composed of three compartments; (a) between the medial femoral condyle and medial

tibial plateau, (b) between the lateral femoral condyle and lateral tibial plateau, and (c) between the patella and femoral condyles. The normal relationships of these compartments is illustrated in Fig. 1. Figure 1a demonstrates force R at the center of the tibial plateaus, and therefore distributed equally between the medial and lateral compartments. Force R can be displaced medially by weakness of lateral muscles and ligaments, varus (bowlegged) deformity of a developmental or traumatic origin, or by permanent displacement of the center of gravity shifting W medially (i.e., varus hip deformity). If one or a combination of these should occur, the increased stress on the medial compartment will surpass the tolerance of the articular cartilage, leading to the aforementioned changes of degenerative joint disease (Fig. 2).

The joint changes seen radiographically with advanced O.A. are:

(a) narrowing of joint space (i.e., wearing down of the articular cartilage),

(b) subchondral sclerosis,

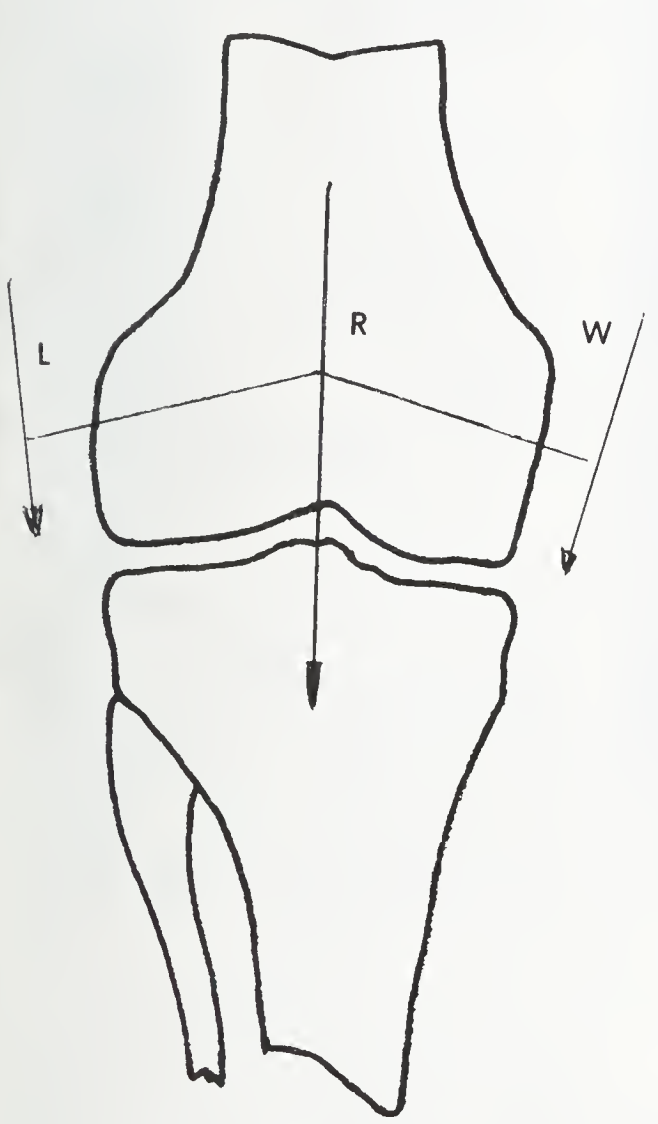
(c) osteophyte formation and

(d) subchondral bone cysts (Fig. 2).

The collapse of the medial compartment will cause further displacement of force R medially and the progression of degenerative arthritis.

Osteoarthritis in the knee is usually asymmetrical. Often there are changes in all three compartments of the same knee with one or two compartments being more severely affected. Figure 2 illustrates medial compartment O.A. with the lateral compartment being relatively normal. The asymmetrical nature of O.A. in the knee must be emphasized because it is critical in determining the surgical approach.

The patellofemoral compartment is often involved with medial or lateral compartment O.A. but may or may not be symptomatic. However, it may be in a degenerative state with an otherwise normal knee, as in chronic recurrent dislocations or subluxations of the patella, or after direct trauma to the patella. Fig. 1b illustrates a normal patellofemoral compartment. As the knee is flexed, decreases causing F(p-f) to increase. Therefore, a weight-lifter doing



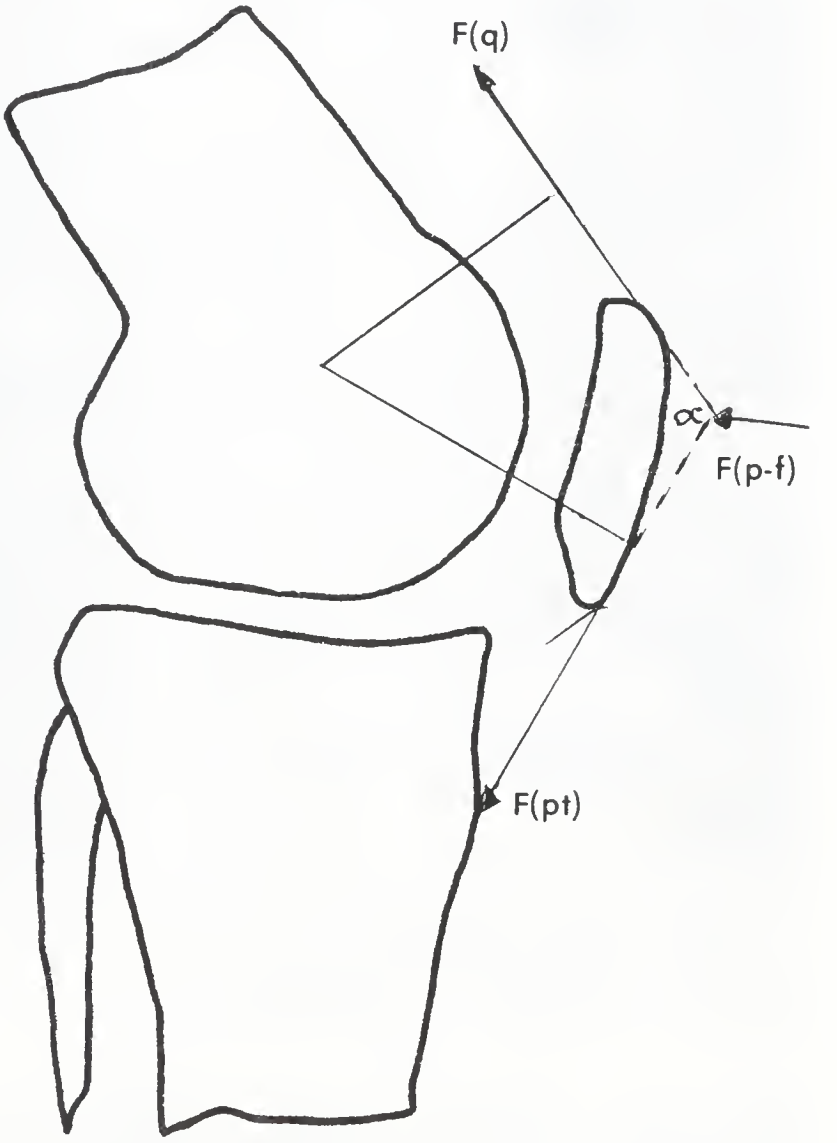




Figure 1b: Biomechanics of patellofemoral joint
F(pt): Force exerted by patellar tendon
F(q): Force exerted by quadriceps
F(p-f): Resultant force of F(q) and F(pt)
$\propto$ : Angle formed by lines of action of forces F(q) and F(pt)

Figure 1a: Biomechanics of tibiofemoral compartments
R: Resultant force of W and L
W: Force exerted by body minus leg and foot
L: Lateral muscle force

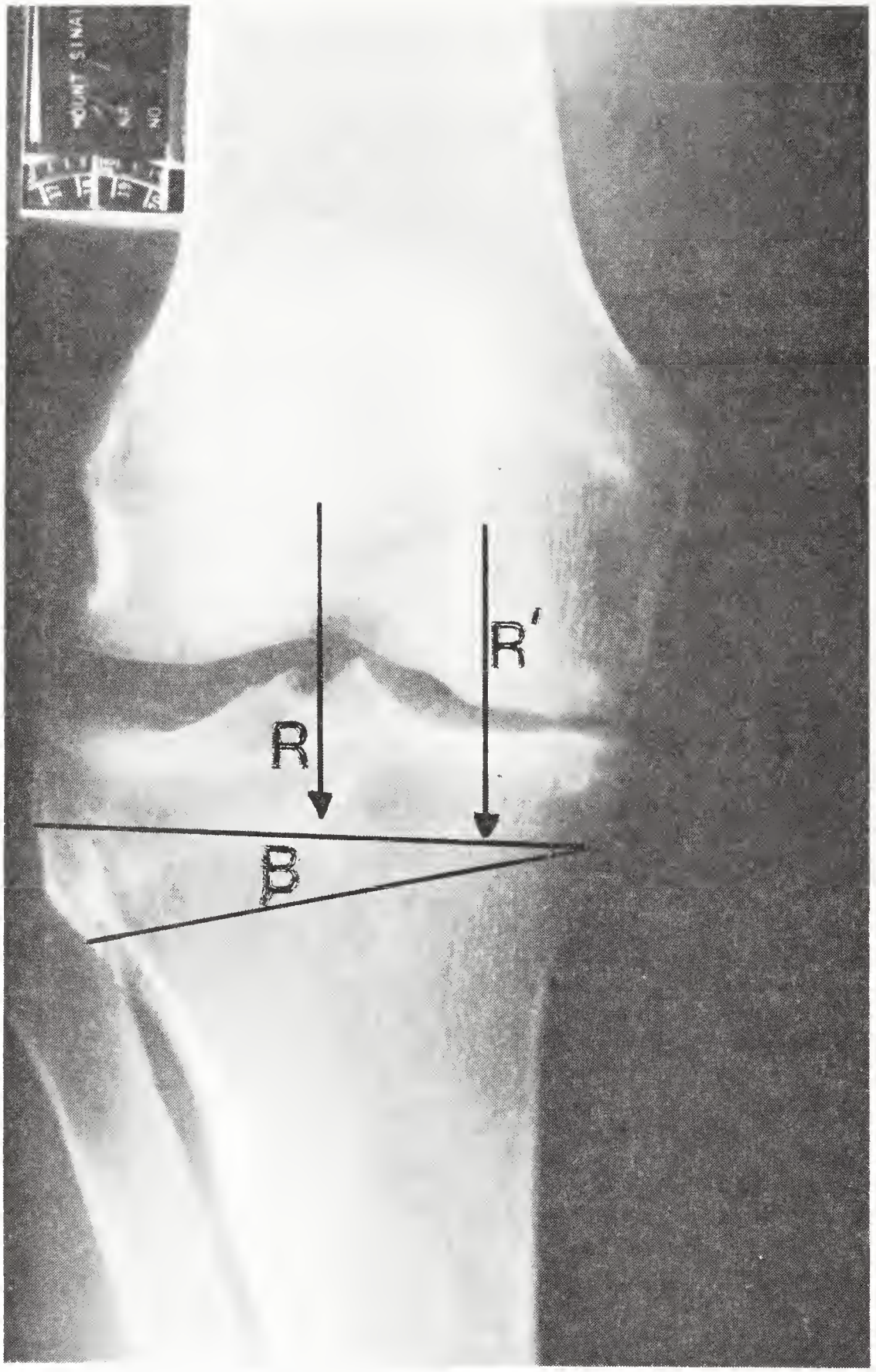



Figure 2: O.A. of medial compartment secondary to varus deformity of the knee. Note medial shift of R to R'. Also, narrowing of joint space, subchondral sclerosis and osteophytes.
$\beta$ : Angle of wedge for high tibial osteotomy.

squats while training is likely to sustain mild degenerative changes (chondromalacia patella) due to repetitive extension of the knee with vigorous exertion of quadriceps. The F(p-f) of the weight-lifter's knee increases due to the combined effects of increasing F(q) and decreasing $\alpha$.

## Surgery

The following are the main prerequisites for orthopaedic surgery: Patient should be:

1) ambulatory;
2) a good surgical risk;
3) amenable to rehabilitation;
   a)adequate muscle strength
   b)good mental attitude.

The main considerations when choosing a particular orthopaedic surgical procedure are the following: age of patient, level of activity, other orthopaedic or medical conditions, and extent of O.A. in the knee. The last consideration will be given the most emphasis; i.e., is the disease congruous (tricompartmental) or incongruous (unicompartmental)? This approach is common to all joints affected by O.A.

## Unicompartmental O.A.

### I) Tibiofemoral (medial and lateral compartments)

Either the medial or lateral tibiofemoral compartments may be affected. The surgical procedures available for this type of incongruous O.A. are:

1) debridement
2) osteotomy ± debridement
3) prosthesis (unicompartmental)

**a)Joint Debridement**

Joint debridement consists of: (a) removal of torn menisci, (b) removal of loose bodies, and (c) drilling of subchondral bone that is not covered by cartilage, to encourage fibrocartilage repair. The success of this procedure depends on the complete removal of all mechanical irritants from the joints. Although it was popular in the past, debridement presently has a limited role, and is mainly indicated for the removal of obvious loose bodies and torn menisci. Debridement is usually done in association with another procedure (i.e., osteotomy).

**b)osteotomy ± debridement**

An osteotomy (cutting bone) is carried out to realign the knee so that the weight is redistributed to the healthier compartment. There are two types of osteotomies considered here: (i) high tibial osteotomy and (ii) distal femoral osteotomy.

*(i) HIGH TIBIAL OSTEOTOMY*

A high tibial osteotomy involves the removal of a wedge of bone from the proximal tibia to correct varus, and occasionally mild valgus (knock-knee), deformity about the knee. To correct the *varus* deformity, the base of the wedge is on the lateral aspect of the tibia (Fig. 2); for the *valgus* deformity, it is on the medial aspect of the tibia. A knee with a varus deformity has the line of action of force R displaced medially (Fig. 2). When this occurs, the stresses are no

longer evenly distributed in the joint. They are increased and concentrated in the medial compartment and decreased in the lateral compartment. An osteotomy can correct the varus deformity, and restore the normal line of action of force R through the center of the joint, or even slightly laterally (Fig. 3). There is evidence that the knee should be corrected to a slight valgus alignment, thereby alleviating more stress in the degenerated medial compartment. This correction will slow down the progression of O.A. in the medial compartment.

Figure 3 is a post-operative x-ray of a patient who underwent a high tibial osteotomy for a varus deformity. A comparison of the two x-rays demonstrates increased medial joint space and decreased subchondral sclerosis in the medial compartment post-operatively. The improvement in joint space of the involved compartment has been said to be due to the reformation of cartilage[3]. However, this has not been well-documented by scientific data. Also, this does not imply that the joint space must widen after osteotomy for pain to be relieved. Unloading of overstressed subchondral bony trabeculae is the probable reason for pain relief.

*(ii) DISTAL FEMORAL OSTEOTOMY*

Distal femoral osteotomy is used to correct moderate to severe *valgus* deformities of the knee. Chronic valgus knee alignment causes degeneration of the articular cartilage in the lateral compartment. The purpose of the osteotomy is to correct existing deformity responsible for the pathogenesis of incongruous O.A., and thereby reduce the patient's symptomatology.

Osteotomies are the treatment of choice for mild to moderate unicompartment O.A. for active patients even up to the age of 80. Ten years post-operatively, 62% had decreased symptoms, and 65% improved functionally, as compared to their condition pre-operatively[3]. Shorter follow-ups indicate an 80-90% improvement[3].

**c)Prosthesis (unicompartmental)**

An alternative to osteotomy in elderly patients is a unicompartmental prosthesis for degenerated medial or lateral compartments. Its advantages are that it replaces only the diseased compartment, and it allows rapid recovery. The major disadvantage is recurrence of pain from prosthetic loosening. However, the knee can be salvaged with total knee replacement or arthrodesis[4].

Figure 3: Post-operative x-ray of a knee which underwent high tibial osteotomy. Staples are inserted to stabilize the osteotomy site. Note the restoration of the normal line of action of force F and the medial joint space; also, the correction of the varus deformity.

## II) Patellofemoral

Patellofemoral O.A. is often associated with medical or lateral compartment O.A., however it may be present by itself. The surgical procedures for patellofemoral O.A. are:

a)debridement;
b)realignment;
c)osteotomy;
d)prosthesis;
e)patellectomy.

Figure 4a: Patellofemoral O.A.

**a)Debridement**

Ficat has described a procedure similar to debridement for the patella called spongization. The operation consists of excising the diseased cartilage and subchondral bone to cancellous bone or "spongiosa" from which fibrocartilage can grow[5]. The early results seem promising especially in cases with localized lesions of the patella.

**b)Realignment**

The patella articulates with the femoral condyles. Normally, the patella lies in the center of the femoral groove formed by the femoral condyles. If the patella is shifted slightly from its normal alignment, F(p-f) will not be distributed equally over the patello-femoral compartment, causing localized degenerative changes in the areas subjected to greater stresses. This condition is called chronic recurrent subluxation of the patella. Also, the patella may dislocate from the patellar groove repeatedly, causing degenerative changes. Both conditions can be rectified by realigning the patella so that it stays in the center of the femoral groove.

A realignment procedure used commonly is Hauser's technique. A parapatellar incision of the lateral fascia and vastus lateralis muscle is made. The patella tendon is freed, and its bony attachment translocated to a point distal and medial to the original attachment.

**c)Osteotomy**

Anterior tibial tuberosity advancement for patellofemoral O.A. was introduced by Maquet. The procedure involves anteriorally displacing the tibial tubercle and its attached patellar tendon. The objective is to decompress the patello-femoral joint by increasing the distance between the center of the joint and patella, thereby increasing the mechanical advantage of the quadriceps muscle, Fig. 4. *In vitro* studies have found a reduction in patellofemoral compression force (F(p-f)) of up to 33% for a 10 mm anterior displacement[6]. This procedure seems to be very promising in alleviating patellofemoral pain and in improving joint function.

**d)Prosthesis**

Patellar prosthesis is used mainly in conjunction with total knee replacements for tricompartmental O.A.[7].

**e)Patellectomy**

Removal of the patella (patellectomy) used to be the treatment of choice for patellofemoral O.A. This is one of the few good excision arthroplasties that is conservative; it only weakens the joint slightly and provides good knee function even in a young patient[8].

## Bicompartmental O.A.

Bicompartmental O.A. involves one of the weight-bearing compartments (either medial or lateral) and the patellofemoral compartment. It is essential to determine whether one compartment is producing most of the symptomatology. If this is the case, then the appropriate procedure would be carried out. However, if both compartments are equally affected, then two surgical procedures would be indicated. For example, a patient with severe O.A. in the medial and patellofemoral compartments could have a high tibial osteotomy for the medial O.A., and anterior tibial tuberosity advancement for the patellofemoral O.A., both carried out simultaneously, Fig. 4b. On the

other hand, if the surgeon felt that the medial compartment disease was responsible for most of the symptomatology, then only high tibial valgus osteotomy may be carried out, and the patella ignored.

The situation of P-F O.A. being seen in conjunction with either medial or lateral compartment O.A. is very common, but in most cases, only one compartment, that being the one responsible for the most symptoms, is treated. If both compartments are, however, producing significant symptoms, both must be treated.

## Tricompartmental O.A.

Tricompartmental O.A. involves the entire knee joint. The surgical procedures available are:

I)total knee replacement ± patelloplasty
II)arthrodesis

### I)Total Knee Replacement

Prior to total knee replacement (as it is known to-day), unsuccessful attempts at interposing membranes such as pig bladder, nylon, fascia lata, gold, cellophane, and other substances were made. In 1975 there were almost 300 available prosthetic designs, many of which had no resemblance to each other. However, there are basically four general categories[9]:

i) *Surface replacements:* replace only the joint surfaces with no inherent stability, therefore requiring intact ligaments.

ii) *Semiconstrained* (non-linked condylar replacements) provide some stability by virtue of the shape of the articular surfaces, Fig. 5.

iii) *Linked units:* provide stability without fixed axis motion, thereby permitting some rotating movement.

iv) *Rigid hinges:* Permit single-plane, fixed-axis motion.

The introduction of the hinge prosthesis represented the beginning of total knee arthroplasty. The hinge prevented rotating movements at the joint itself, so that the rotational forces are transmitted along the stems of the prosthesis, causing loosening. The reaction to the high rate of loosening among the hinge prosthesis led to the development of the various other classes of total knees.

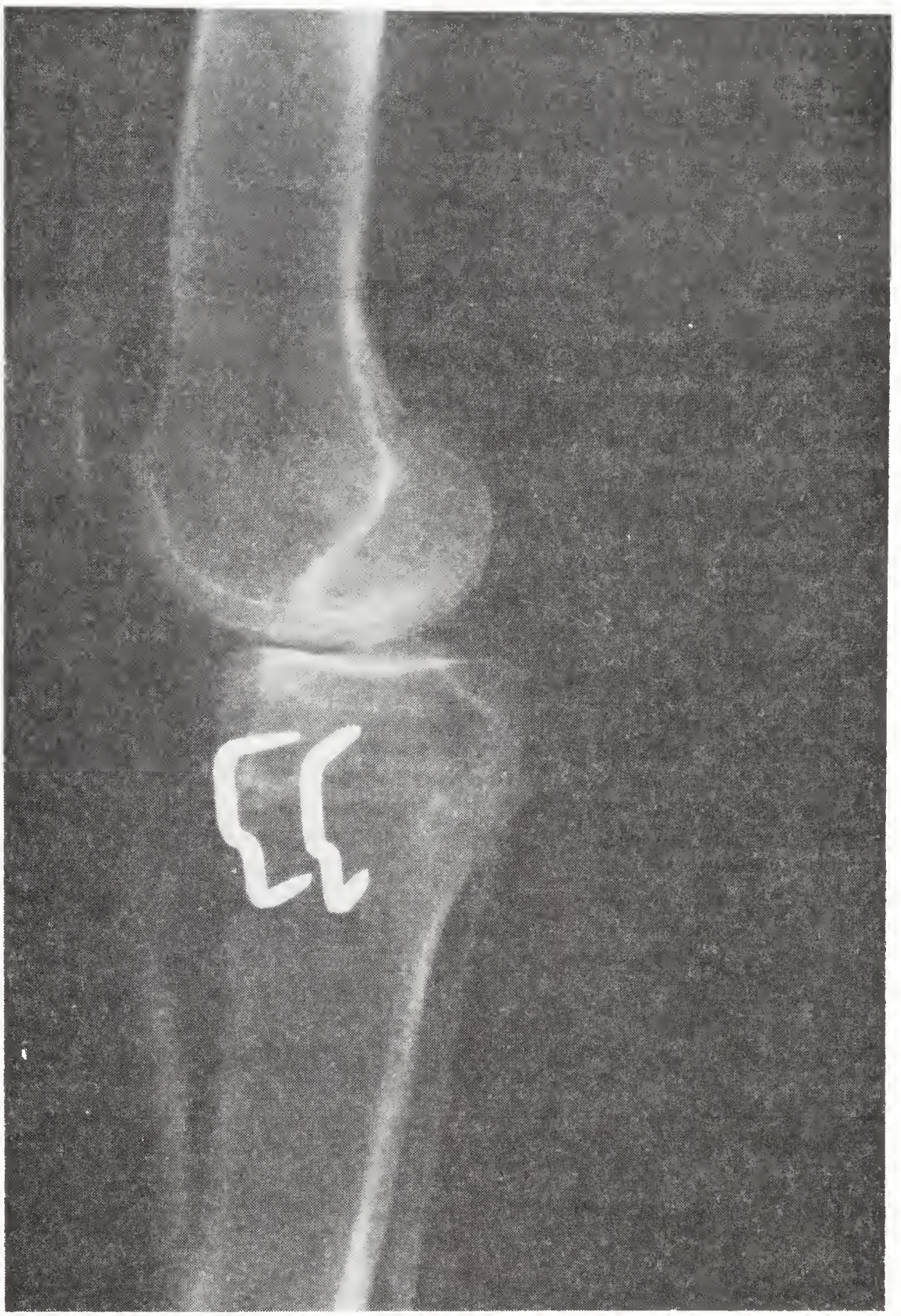


Figure 4b: Post-operative x-ray of a knee which underwent anterior tibial tuberosity advancement causing decompression of the patellofemoral compartment. The staples are from the high tibial osteotomy. Therefore, the patient had significant bicompartmental O.A.. The anterior tibial tuberosity advancement is stabilized by filling the gap with an allograft or as in this case, the wedge of bone from the high tibial osteotomy.

Presently the state of total knee replacement is discouraging. Category (i) is used in selected cases, i.e. stable knees. Category (ii) has loosening of components because the stability of the prosthesis affected by the shape of articulating surfaces causes rotational forces to be transmitted along its stems. Category (iii) is too new to comment on. Category (iv) is plagued with loosening, component breakdown, and associated patellofemoral symptoms[10]. Though the long-term results of total knee arthroplasty are poor, there is temporary relief of pain. The major advance in total knee replacement over the next ten years will probably be implant fixation.

If a young patient presented with advanced, congruous O.A. secondary to a septic episode, what would be the approach? A total knee

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replacement would have a poor prognosis in a young active patient. Since there is a tendency for prosthetic loosening with time, the patient would outlive the prosthesis, and would require subsequent surgical intervention. This leads one to the consideration of arthrodesis.

### II)Arthrodesis

Knee fusion provides complete relief of pain at the expense of knee movement. For a young patient with severe tricompartmental O.A. with good adjacent and contralateral joints, arthrodesis is the treatment of choice. Arthrodesis was the treatment of choice for elderly patients with congruous O.A. before the advent of total knee replacement.

Arthrodesis may be used as a salvage procedure after failed surgery. An exception to this is an arthrodesis after a hinge prosthesis. The hinge prosthesis requires a large amount of bone resection, making a later arthrodesis very difficult to perform[10]. It is the opinion of some orthopaedic surgeons that a hinge prosthesis should never be used because of this problem.

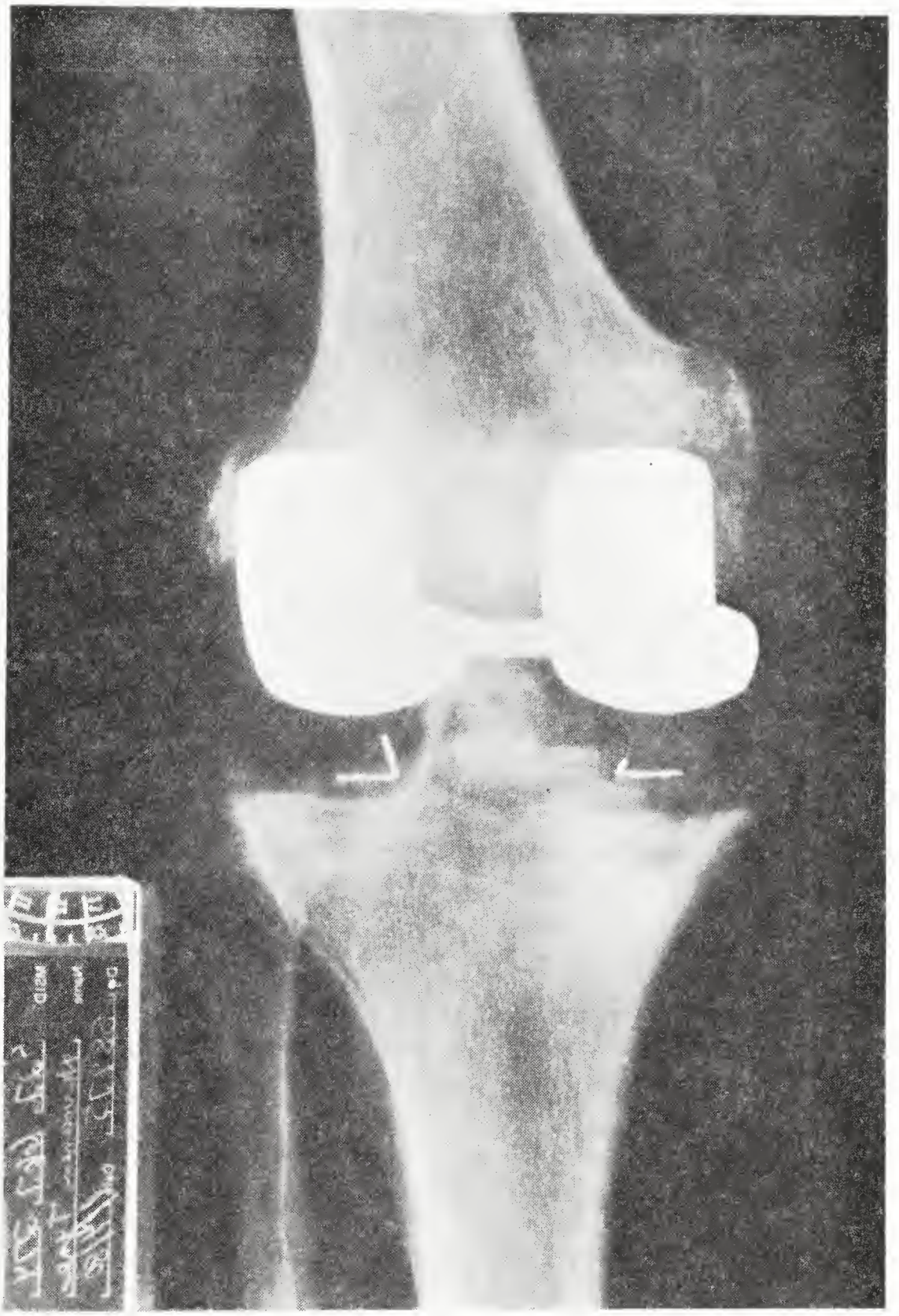

Figure 5: Total surface arthroplasty (condylar prosthesis). Note the metal femoral condyles and plastic tibial plateaus (radiolucent). Also, knee alignment is in good position so that weight is distributed evenly within the knee.

## Summary

For the surgical intervention of O.A. knees to be successful, it is essential to carefully select the appropriate procedure for a given patient. In this article, a number of surgical procedures for O.A. knees have been discussed. The conservative approach of preserving biological material, as well as allowing alternative salvage procedures, have been emphasized. □

## Acknowledgements

We would like to thank Louis, Elaine, and especially Dr. A. Gross for their assistance.

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# Diabetic Control And Home Blood Glucose Measurement

Stephen Holzapfel 8T2

*The accuracy of a portable blood glucose measuring instrument (Ames Dextrometer) was compared with that of conventional urine glucose measurement in predicting the actual blood glucose in diabetics. When the urine glucose was negative, the mean blood glucose was 155 mg%, with a standard deviation (S.D.) of 50 mg% (n = 170). The least squares regression line for the Dextrometer at the same blood glucose value had an S.D. of only 15 mg% (n = 58), significantly less than that of urine glucose ($p < 0.01$). This study shows that home blood glucose monitoring can give a more accurate reflection of actual blood glucose levels than home urine glucose measurement, and may be of greater benefit in controlling high-risk diabetics.*

The complications of diabetes mellitus can be reduced by good blood glucose (BG) control. [2 6] The ultimate treatment goal will be to mimic physiologic insulin release by the constant monitoring of an artificial pancreas[3], or perhaps transplantation of pancreatic islet of Langerhans cells.

These aims are still to be realized, while present therapy relies on only poorly imitating normal BG homeostasis. "Tightness" of control is assessed clinically, and by laboratory measurement of plasma glucose. Day-to-day control is most commonly attempted by measuring urine glucose (UG), at best an indirect measure of BG.

Direct patient measurement of BG was made quantitatively possible when glucose oxidase test sticks and portable reading meters for home use became available. Trials of these instruments have demonstrated closer control of BG in diabetic patients[9 12], with a lower incidence of complications due to hyperglycemia. Others have questioned the accuracy of these systems, and argue that home measurement of UG and careful follow-up provide as good diabetic control.[11]

This study investigated the accuracy that can be achieved in measuring BG directly, using Ames "Dextrostix" paired with the Ames "Dextrometer", as compared to conventional UG measurements.

## Method

87 patients, both diabetics and non-diabetics, volunteered for the study, and had blood samples drawn at Sunnybrook Medical Centre in Toronto. Venous blood was drawn from an antecubital vein for laboratory plasma glucose determination. Capillary blood for the Dextrostix was obtained by fingerprick within five minutes following venipuncture. Because of improper technique, three values were discarded.

The venous plasma glucose (lab blood glucose = LBG) was determined by the Sunnybrook biochemistry laboratory, using an American Monitor Discrete Kinetic Analyzer. The Dextrostix/Dextrometer system directly determined capillary glucose (home blood glucose = HBG). Both methods measured glucose specifically by using glucose oxidase, coupled with a peroxidase/dye, to produce a colorimetric change, which could then be read.

Both methods were compared, using samples of the same plasma, to determine if, in fact, both systems were measuring the same variable.

Records of simultaneous fasting LUG and LBG values were obtained from 50 randomly-selected diabetics. The urine glucose (LUG) was measured in the Sunnybrook laboratory, using a commercially-available test kit similar to those available to patients.

## Results

Venous and capillary blood varied slightly in their glucose concentrations, with venous blood having the lower value. In addition, plasma glucose is 10 to 13% higher than that of whole blood[13]. The LBG method uses plasma, while HBG utilizes a semipermeable membrane to separate the RBC's from the reaction surface. Measurement of LBG and HBG in the same plasma samples showed a high correlation ($r^2 = 0.97$, *least squares regression* line: LBG = 0.93HBG + 11, n = 10), over a range of LBG from 50 to 325 mg%. It was therefore concluded that both systems were indeed measuring the same variable.

The values for LBG and HBG are plotted in Figure 1. The deviation between HBG and LBG appeared proportional to HBG: as HBG increased, so did the variance. To facilitate statistical analysis, this trend

was eliminated by calculating the "% Standard Error" for each observation:

$$\%SE = \frac{HBG - LBG \times 100\%}{HBG}$$

%SE had a normal distribution, and was independent of HBG over the range studied. The 95% prediction interval for LBG using HBG was calculated, using the %SE[8].

The variance of the %SE of the first 15 observations was greater than all of the succeeding ones ($p < 0.05$). This was attributed to learning effect; hence, the values were not included in the analysis. The variance of the remaining values was randomly distributed, and showed no statistical trend.

## Discussion

Since the basic defect in diabetes lies in the regulation of BG levels by insulin, it makes both teleological and intuitive sense to treat the disease with as close an approximation to normal BG values as possible. That precise control, instead of only poor symptomatic control (over polyuria, for example), is desirable was demonstrated in the last decade. The microvascular lesions resulting in retinopathy[4], neuropathy[5], and nephropathy[10], were all shown to have a lower incidence in diabetic animals under close control, compared to those under poor control. Studies in diabetic humans under excellent control have shown a decrease in the incidence of diabetic retinopathy[6], and even regression of neovascularity[12]. This is of more than just passing interest, as diabetic retinopathy is the leading cause of blindness in North America.

Enthusiastic reports[9 12] of improved glucose homeostasis through use of home BG monitoring have been met with some skepticism[1 11]. The accuracy of HBG has been criticized for showing no significant improvement in diabetic therapy over conventional UG measurement and careful clinical follow-up[11]. These studies, however, did not analyze UG and BG accuracy quantitatively. In this study, a comparison of both UG and HBG was made, and their accuracies assessed in predicting the actual BG,

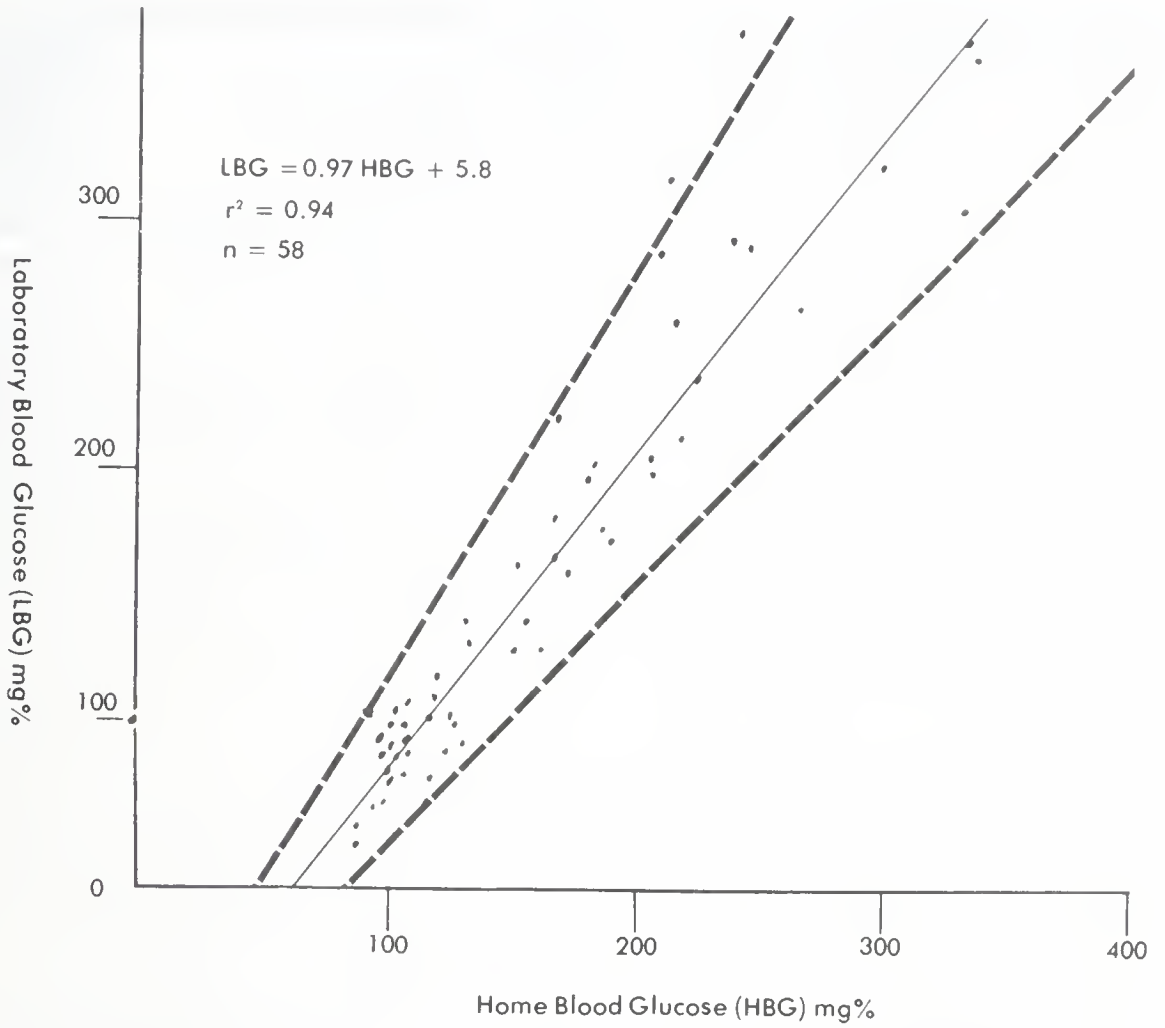


Figure I: Graph of Dextrostix/Dextrometer Blood Glucose values versus the American Monitor KDA Plasma Glucose determination. The solid line represents the least mean squares regression line and the dotted line, the 95% prediction interval.

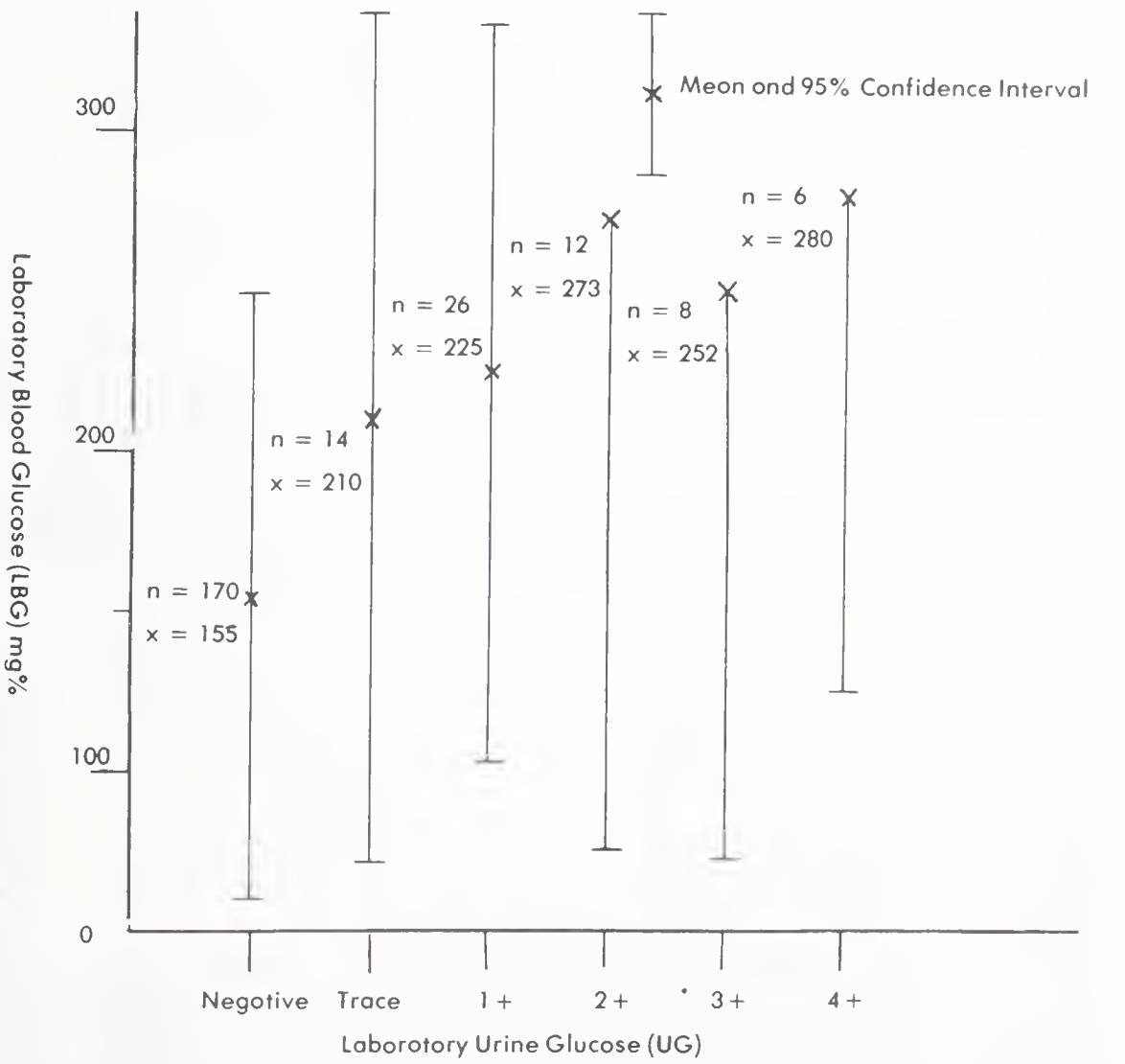


Figure II: Graph of Urine Glucose values versus the American Monitor KDA Plasma Glucose level. The error bars represent the 95% confidence interval.

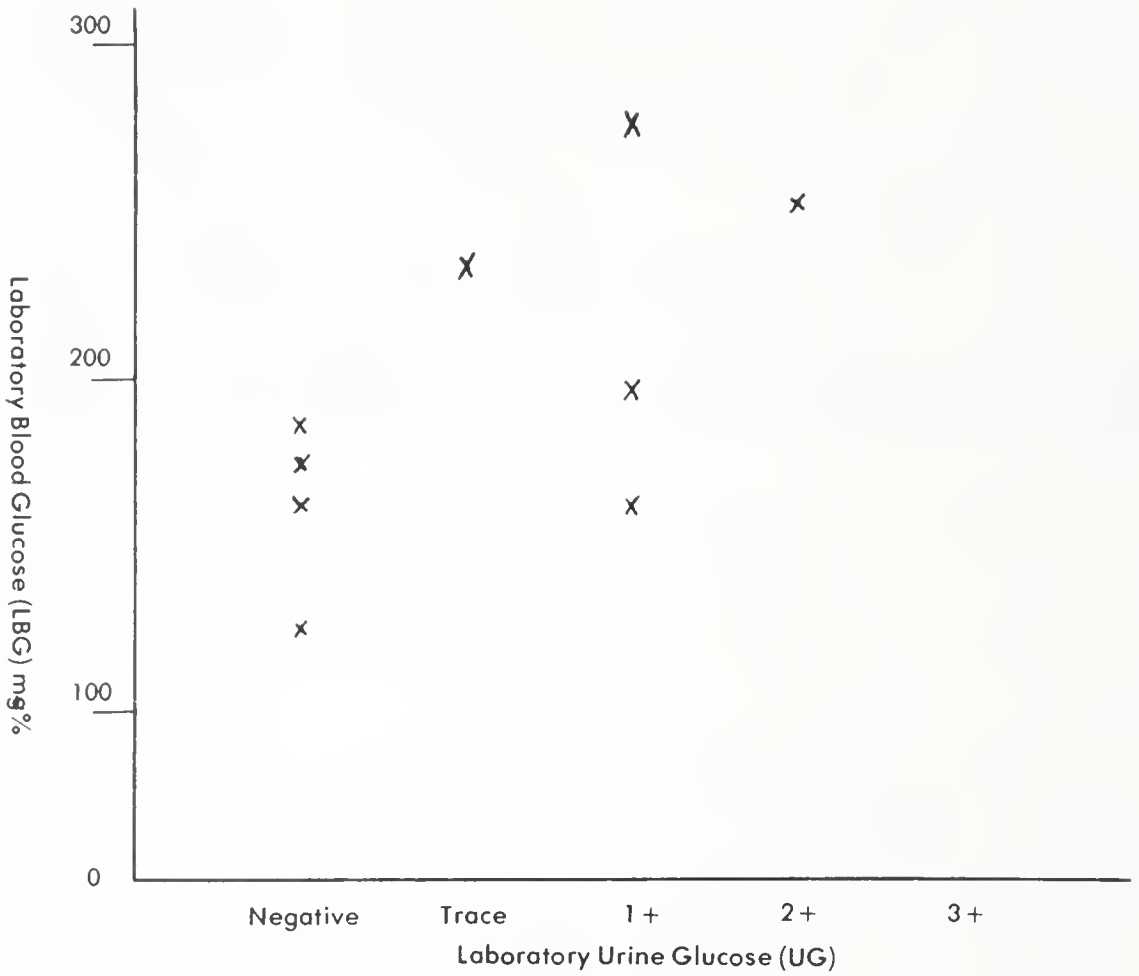


Figure III: Record of Urine Glucose and Plasma Glucose levels taken from the same individual.

using LBG as a standard.

UG, as a measure of fasting BG, showed a large variability (Figure 2). When the urine was negative for glucose, the 95% confidence interval for LBG spanned a range of 200 mg% (mean LBG = 155 ± 95 mg%)! More importantly, over 20% of the negative LUG values had LBG readings over 200 mg%. The large variability was due to the difference between normal BG and the renal glucose threshold, as well as inter-individual differences in renal tubular glucose reabsorption and $T_m$ levels (partly the result of diabetic nephropathy). But even *intra*-individual readings (Figure 3) showed large deviations, presumably while the renal function did not undergo great change. The large prediction intervals at the higher levels of UG (3±, 4±) are in part due to the small sample size. LUG appears to be a qualitative test only, unless one has many LUG/LBG comparisons. Even then, the sensitivity of LUG's reflection of true BG around the normal range is poor to non-existent.

In contrast, HBG measurement was most accurate in the normal BG range, with a 95% prediction interval at ± 20% of the HBG value. At LBG = 155 mg%, the 95% prediction interval was ± 30 mg%, one-sixth the range of the negative LUG value. Thus the prediction interval for HBG was significantly less ($F=4$, $p<0.01$) than that for LBG. While not replacing LBG measurement in accuracy, the faster, more portable HBG system is certainly far more accurate than LUG determination.

Differentiating hyper- and hypoglycemia in Emergency rooms has traditionally relied on UG as a guide for hyperglycemia, while Dextrostix have been used to qualitatively determine hypoglycemia. In the close control of diabetics, the risk of hypoglycemic reactions increases, and accurate measurement of low-normal BG becomes more important. While LUG is effective in monitoring hyperglycemia, as in loosely-controlled diabetics, measuring HBG directly would give a clearer picture of the critical changes in the BG of a tightly-controlled diabetic.

Using Dextrostix and the Dextrometer is straightforward:
1) Fingerprick provides a drop of capillary blood;
2) the blood is uniformly spread over a Dextrostix;
3) after waiting exactly one minute,
4) the blood is washed off, and a reading made.

Although home urine testing is even easier, it has been shown to have a high degree of patient error.[11] Problems occur at every step in HBG monitoring as well. For those patients having an aversion to pricking themselves, an automated lance is available. Repeated pinpricks can leave sore fingers, limiting the frequency of use of this system. With microangiopathy, obtaining a large enough drop of blood is another problem; this results in incomplete smearing of the stick, and an abnormally low value—this can be falsely reassuring when a hyperglycemic BG is read as normal. A value of 107 was obtained for one asymptomatic diabetic, for example, whose LBG was actually 213 mg%; insufficient blood on the stick caused the error. (This value was removed from the study before LBG was known.) Timing of the enzymatic reaction is also critical, with errors of ± 5 seconds yielding discrepancies. Too vigorous or too little washing leads to excessively low and high values, respectively.

These problems indicate the need for practice, as well as feedback using a standard—such as LBG—for comparison. If any doubts about technique exist, the procedure and reading should be repeated. Even for an almost-competent user (such as myself) pricking *other* people, more than 15 attempts were necessary to reduce the variability to acceptable levels. In the clinical setting, patients could best be trained during the initial admission to hospital, concurrent with the rest of the teaching program for diabetics.

HBG measurement has a place in monitoring the tight control of well-trained, highly-motivated diabetics. Such control improves the prognosis of the disease, and would be of value in selected high-risk patients. Pregnant diabetic women and their babies will benefit. Patients with hyperesthetic neuropathy experience less pain when under very close control. "Brittle" diabetics, and those with little warning of hypoglycemic attacks, would have better monitoring. Finally, this technique would slow the progression of retinal neovascularization. (For those with poor vision, reading a Dextrometer is easier than comparing colour charts.)

In conclusion, then, home glucose monitoring provides a more accurate

picture of blood glucose, in the range needed for close control of diabetes, than does measurement of urine glucose. □


## Acknowledgements

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# Phencyclidine Abuse: An Overview

Michael Fehlings 8T3

*Phencyclidine (PCP), originally developed as a short-acting analgesic for general anaesthesia, is no longer used medicinally because of its post-operative side effects. It is a potent mood-altering drug whose illicit use has become increasingly popular. The patient with low does phencyclidine intoxication (5-10 mg) may present with schizophrenic-like symptoms. In high doses (greater than 20 mg), PCP produces a comatose state. PCP toxic psychosis is largely treated symptomatically and supportively.*

Phencyclidine or PCP (1-(1-phencyclohexyl) piperidine), a structural analogue of Ketamine, is a potent sympathomimetic and hallucinogenic dissociative anaesthetic agent. First synthesized as Sernyl in 1957, PCP was heralded as the long-awaited "ideal" anaesthetic agent.[1]

Phencyclidine in doses of 0.25mg/kg IV produced anaesthesia sufficient for major or minor surgery. Phencyclidine was also used as a pre-anaesthetic agent, for post-operative analgesia, in burn dressing, as an abreactive agent, and for the treatment of psychoneurosis.[2]

However, certain adverse effect of phencyclidine anaesthesia, including psychologically distressing and dysphoric post-anaesthetic reactions, brought an end to human testing in 1965.[3] In 1967, PCP was re-introduced as the veterinary anaesthetic Sernylan which was extensively used in primate research. Since 1978, all legal manufacture and sale of PCP has been stopped.[1]

## History of Abuse

The illicit use of PCP was born during the "summer of love" in the Haight-Ashbury district of San Francisco in 1967. It was sold as the "Peace Pill".[4] Early abusers found that the drug provided a unique "high", which was reported to be very intense, several times stronger than marijuana and comparable to LSD, although shorter in duration. Considered especially desirable were the drug's effects on thinking, time perception, sense of reality, and mood.[2]

It soon, however, became apparent that PCP was associated with "bad trips": "...PCP quickly acquired a reputation as a bummer drug. People named Strawberry were going around punching people named Wildflower" (T. Cahill, Rolling Stone).[5] By 1968, PCP had all but vanished from the illicit drug scene in the Bay area.[6]

A reincarnation of the drug's popularity has occurred in the 1970's, due principally to first-time abusers seeking the drug's pleasurable effects.[2] PCP is currently sold on the street under a bewildering assortment of names (Table 1).[6] According to a 1977 survey by the Drug Abuse Warning Network (DAWN), 14% of 18-25 year olds in the U.S.A. have used PCP at least once.[2] This figure is undoubtedly much higher when one considers that PCP, which is easily and cheaply manufactured by clandestine labs, is commonly misrepresented as THC, mescaline, cocaine, psilocybin, and other more expensive psychotogenic drugs.[1 7 8]

Lerner and Burns (1978) correlated demographic, social history and background variables to derive a profile of the typical PCP user. He is a white male, resides in a suburban area, and regularly uses a broad assortment of different drugs, frequently in combination with PCP. Furthermore, the typical user performs poorly in school, and has a history of violent behaviour as well as an arrest record.[2]

Chronic users develop tolerance to the psychic effects of phencyclidine. Furthermore, the chronic abuse of PCP is associated with persistent memory and speech deficits, severe anxiety, personality changes and social withdrawal.[2]

## Chemistry

The chemistry of PCP lends the drug to assorted methods of abuse. Phencyclidine is a white crystalline solid (pKa = 8.5), readily soluble in water or alcohol, and highly lipid soluble at physiological pH.[1 2] The self-administration of PCP can be by smoking a compound (either marijuana or tobacco) laced with the drug, by insufflation ("snorting"), by oral intake, or by intravenous injection ("mainlining"). The favourite method among chronic abusers is smoking as this, to some degree, allows for the self-titration of the level of intoxication. In suicide attempts with PCP, massive amounts of the drug are commonly taken

orally.[2 7]

The effects of smoking are experienced in 2-5 minutes, and following either insufflation or oral ingestion, effects are felt in about 15 minutes. The "high" is maintained for 4-6 hours, after which a "come down" is experienced. The return of normality generally requires between 24-48 hours - the duration of effects may, however, be prolonged with increasing doses.[6]

## Pharmacology

The pharmacological actions of PCP are due to the increased availability of dopamine, which is achieved both by promotion of release and inhibition of uptake. Phencyclidine's actions are enhanced by antimuscarinic drugs and antagonized by cholinergic agents. The drug's property of blocking the uptake of noradrenaline is related to the sympathomimetic effects evident clinically. The impairment of pain, touch, and proprioceptive sensation is consonant with its clinical use as an anaesthetic. The EEG pattern following PCP ingestion characteristically is delta-theta, mixed with low voltage fast activity.[4]

While PCP generally is considered to be a long-acting drug, its plasma half-life is only about 11 hours - even following large overdoses. As a result of its high lipid solubility, PCP is rapidly taken up by the CNS. Consequently, concentrations in the brain and CSF persist longer than in plasma. Thus, the toxicity of phencyclidine may be greatest when the plasma levels are lowest. Furthermore, PCP undergoes considerable gastroenteric recirculation. Some of the drug is secreted from the blood into the stomach where it is acidified. Upon entering the alkaline medium of the upper intestine, it is deionized and reabsorbed. In general, three factors account for phencyclidine's long duration of action: active metabolites, sequestration in fat, and recycling through the GI tract.[4]

The excretion of PCP occurs in the urine, mainly as the glucuronides of two known hydroxylated metabolites. The urinary excretion is very pH-dependent: since phencyclidine is a weak base, acidifying the urine markedly accelerates excretion.[1 4 6]

## Clinical Presentation

The spectrum of clinical symptoms ascribed to PCP is dose-dependent (Table 2).[4] A low does of PCP is in the range of 5-10 mg, a moderate dose is between 10-20 mg, and a high does comprises any intake greater than 20 mg.[6]

The patient with a low does phencyclidine intoxication may simply present in an acute confusional state mimicking paranoid schizophrenia. The effects of low dose intoxication are also subject to inter-individual variation. The quiet, less aggressive individual may present with catatonic or stuporous behaviour, while the aggressive, outspoken person may exhibit agitation and combativeness.[6]

The symptomatology of low to moderate does intoxication is a characteristic one. The neurological effects are assorted and include: ataxia, drowsiness, stupor, variable pupil size (usually miotic), blurred vision, horizontal and vertical nystagmus, tremors, accentuated deep tendon reflexes, and muscle rigidity. The mental status of the patient may vary from a confusional state to one of disorientation and depersonalization. Hallucinations are rare. The cardiovascular effects include tachycardia, and raised systolic and diastolic blood pressures with a slightly elevated pulse pressure. The respirations are usually

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Table 1

SLANG TERMS FOR PCP

| | |
|---|---|
| Angel Dust | Peace Weed |
| Dust | Rocket Fuel |
| PeaCe Pill | Elephant Tranquillizer |
| Hog | Super Weed |
| Angel Mist | Horse Tank |
| Angel Hair | "T" |
| Crystal | Cyclone |
| Crystal Points | Surfer |

Table 2

CLINICAL EFFECTS - INCREASING ORAL PCP DOSES

5-10 mg - Ataxia, nystagmus, mood changes,hallucinations, vomiting, analgesia, paresthesias.
Onset 1-2 hrs; duration 4-8 hrs.

10-20 mg - Stupor, eyes open, random movements, resting nystagmus, hyperreflexia, hypertension.
Onset ½-1 hr; duration 8-24 hrs.

>50 mg - Deep coma, chills, nystagmus, eyes closed, hypertension, laboured breathing, seizures.
Duration up to 4 days.

> 100 mg - Lethal -- 3 to 10 days.
Respiratory depression, hypertensive crisis, cerebral bleeding, loss of deep tendon reflexes, decreased liver and renal function.

# Clinical Recognition And Management Of Phencyclidine Toxicity

Marion Frendo 8T2

In recent years, phencyclidine (PCP) has become an important member of the world of illicit drugs. An increase in the number of persons presenting to the Emergency Service of hospitals, intoxicated with this drug, has paralleled the growing prevalence of its use in North America.

Certain factors pertinent to phencyclidine tend to predispose its users to accidental overdose. The content of PCP in tablets and capsules, for example, varies considerably—one study showed that the tablets could contain an amount ranging from 2.2 to 9.9 mg, and the capsules, from 0.4 to 81 mg of phencyclidine. In addition, a powder form is available; it may be combined with other drugs; and perhaps most confusing of all, most users are unaware that it is phencyclidine that they have purchased. (As mentioned in the preceding article, misrepresentation as other hallucinogens or stimulants commonly occurs.) Thus, the Emergency Room physician may be faced with a patient who presents with a history of drug intoxication, but who is otherwise unable to provide accurate information about the identity, quantity, or purity of the ingested drug. Diagnosis is further complicated in the absence of a recent history of drug use (e.g., a comatose patient). An ability to recognize the signs and symptoms of PCP toxicity is therefore of importance in the management of such a case.

Phencyclidine intoxication may be suspected in patients who present in an agitated, catatonic, or comatose state with the following findings:

1) Horizontal and/or vertical nystagmus;
2) an increase in both systolic and diastolic blood pressure to moderately hypertensive levels;
3) an increase in secretions;
4) muscle rigidity;
5) a history of recent drug ingestion.

When PCP is suspected as the cause of the patient's intoxication, laboratory techniques can confirm its presence. Gas Chromatography can detect PCP in both serum and urine. As there is no antidote to PCP, affirming its presence is essential in allowing the initiation of necessary supportive measures—a failure to provide the proper support can result in the patient's death. This is an important distinction between phencyclidine and other hallucinogenic agents such as LSD. Although both may precipitate accidental deaths, only PCP can kill through its physiological actions.

## Mild Intoxication

Most cases present only as a mild intoxication (1 to 5 mg of PCP), the manifestations of which occur between one and eight hours after ingestion. Agitation is the most consistent symptom, and is often exacerbated by a concomitant state of hyperacusis and other sensory distortions. Psychic phenomena seen with this drug include: paranoia, alterations in body image, feelings of "space-walking", a perception that objects are changing in their size, shape and distance, and a dissociation of feelings from thought.

Physical signs may include any of the following: horizontal and/or vertical nystagmus, dysarthria, ataxia with a lurching gait, bizarre vocalizations (e.g., clicking noises made by the tongue), drooling and diaphoresis (due to increased secretions), moderate increases in blood pressure and heart rate, nausea, and anaesthesia.

The treatment for mild intoxication consists of observation, minimal stimulation, and intravenous diazepam. Observation is important because an increase in blood pressure, or a deterioration in the level of consciousness, may indicate a more serious level of intoxication. An environment in which there is poverty of stimulation prevents the patient from becoming increasingly anxious and hostile. Diazepam calms the patient and decreases his muscle spasms.

## Moderate Intoxication

At a dose of 5 to 20 mg of phencyclidine, the patient responds to stimuli, but is usually stuporous, and displays a blank, catatonic stare. Physical findings include: myoclonus, with muscle rigidity on stimulation; spasm of the masseters and strap muscles; analgesia, and inhibited touch and proprioceptive sensations; opisthotonus; increased bronchial secretions and salivation;

fever, tachycardia, and an increased blood pressure.

In these patients as well, diazepam is administered intravenously. One also attempts to rid the patient of as much PCP as quickly as possible, since the larger the dose taken, the longer its duration, and the greater its severity of effect. Urine acidification to a pH of less than 5.4 with ascorbic acid or ammonium chloride enhances excretion of the drug (pKa 8.5) a hundredfold. Gastric lavage will remove any drug still present in the stomach lumen. Since PCP can undergo ion trapping, adsorption of the drug by activated charcoal will also prevent its reabsorption as the drug passes into the alkaline environment of the small intestine.

A substantial increase in blood pressure may warrant administration of an anti-hypertensive agent such as diazoxide or hydralazine. Severe hypertension is usually not a problem, but there have been reported deaths due to PCP-induced adrenergic crisis.

Suctioning may be required to remove excess secretions; however, care must be exercised to avoid inducing laryngeal muscle spasm.

## Severe Intoxication

Doses of over 20 mg induce coma. Unlike the overdose states of other hallucinogens, this state is often prolonged. Blood pressure is markedly elevated, intermittent apnea may occur, and death is a distinct possibility. Status epilepticus and decerebrate posturing are ominous signs. In the situation of coma of unknown etiology, an EEG showing diffuse theta activity with delta waves is compatible with PCP intoxication.

The treatment of these cases includes all of the measures previously mentioned for lower-dose intoxications. Urinary excretion of PCP is enhanced by acidification to pH 5.0, and by furosemide-induced diuresis. Adequate fluid replacement is essential. Intubation, carried out under succinylcholine anaesthesia to prevent laryngeal spasm, is indicated as there is a danger of respiratory arrest. Diazepam or phenytoin is given to prevent convulsions.

Once a person awakens from such a state, recovery to normal often takes an additional several days. Sequestration in fat (phencyclidine is highly lipid-soluble), gastrointestinal recycling, and the actions of active metabolites all extend the drug's duration of action. During the improvement phase, the mental status gradually returns from a psychotic-like picture to normal. A schizophrenia-like thought disorder is frequently evident, exemplified by impaired interpretation of proverbs, and diminished performance in the "serial sevens" test. In addition, there is commonly a sense of depersonalization, and altered proprioceptive abilities. Because the patient may be inclined to injure himself or others, administration of chlorpromazine or haloperidol can effect necessary behavioural control. This may also apply to some cases of lower-dose intoxications.

Characteristically, when complete recovery from the acute effects occurs, the patient remains amnestic for the entire period of intoxication. In some cases, amnesia may encompass a period longer than seven days.

## PCP - Induced Psychosis

In some individuals, the use of PCP, even a single dose, can precipitate a psychotic episode, usually lasting 7 to 30 days, but occasionally persisting longer. The clinical appearance resembles schizophrenia. It has been suggested that such individuals may be "predisposed" to developing schizophrenia, and that the exposure to PCP pushes the person into such a psychosis. Indeed, a psychotic or pre-psychotic personality is associated with such cases. Moreover, in those with already established schizophrenia, a single dose of PCP may provoke a prolonged psychotic phase. An overdose of the drug is not necessary—blood and urine are often negative for phencyclidine.

Features of a presenting schizo-affective state include paranoia, and a thought disorder oscillating in intensity. Reappearance of an acute schizophrenic episode can occur, unrelated to PCP use, within a year.

Such an outlook often mandates long-term antipsychotic therapy—e.g., chlorpromazine. The paranoia is usually the last symptom to disappear.

## PCP - Induced Depression

Depression can be induced by acute PCP toxicity, or it may follow a psychotic episode. Depression is frequently overlooked, however, by those responsible for treatment, because they may gather adequate satisfaction and relief at seeing merely the toxic manifestations subside. It is important to recognize the possibility of depression, as the risk of suicide among PCP users is not inconsiderable. The depression may last only one day, or it may persist for several months.

Tricyclic antidepressants in full therapeutic dosages have had limited success in the treatment of the depression. In this group of patients, there is a danger of a return to PCP usage, because the user perceives the numbing alteration of consciousness produced by the drug as having an antidepressant effect.

The depression may be partly attributed to the reaction of the affected person to his cerebral dysfunction; that is, the awareness of memory impairment and other difficulties contribute to the depression. Whether the depressions subsequently lifts as a result of improving cerebral function, or because of diminished subjective concern about the dysfunction, is not clear. The depression and the state of cerebral function are, however, clearly related.

## Conclusion

The problem of phencyclidine abuse poses some unique features in the area of diagnosis. Presentation is usually in the Emergency Room, which necessitates immediate action. This reason, along with the increasing use of the drug among the young population, makes a knowledge of the characteristic effects of PCP (along with other circumstantial evidence) worthwhile, since it may be the only basis on which treatment is initiated. □

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normal. Miscellaneous effects include increased bronchial secretions, lacrimation, salivation and diaphoresis. Any associated abdominal cramping, nausea, vomiting and hematemesis is attributable not to the action of PCP on the GI tract, but rather to by-product contamination frequently found in street samples.[6 8 9]

Clinically, the most characteristic finding following a high (over 20 mg) or massive (100 mg) dose intoxication is prolonged coma. In high does intoxication the patient presents with a resting nystagmus, severely elevated blood pressure, muscle rigidity and hyperreflexia. Seizures, opisthotonos, acute dystonias, cardiac arrhythmias and acute renal failure may also occur. Massive doses may precipitate cardiovascular collapse, decreases in deep tendon reflexes and apnea.[6]

## Management of Overdose

As no pharmacologic antidote exists to counteract phencyclidine intoxication, treatment is largely supportive.[4] Adequate ventilation should be provided, and frequent suction of excess secretions should be performed. Patients should be treated in a quiet room with few extraneous sounds, as the avoidance of even minimal stimuli lessens the severity of the toxic psychosis.[8] Diazepam may be required for uncontrolled seizures.[8] Acidification of the urine to pH 5.5 with ammonium chloride or ascorbic acid will accelerate the excretion of PCP. Unless the history is suggestive of recent oral ingestion of the drug, gastric lavage is contraindicated in the alert patient as it may induce laryngeal spasm. Continual gastric suction, because it reduces gastroenteric recycling, is a good procedure and should be done routinely.[4]

## Conclusion

Phencyclidine is a potent mood-altering drug whose illicit use has become quite fashionable. It is frequently misrepresented as other hallucinogenic drugs, whose users may present with unintentional PCP overdoses. The physician should consider the possibility of PCP toxic psychosis in patients presenting with schizophrenic-like symptoms, confusion, or disorientation. Management of overdose is largely supportive and symptomatic. □


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# Informed Consent In Double-Blind Experiments

John G. Young 8T2

*With the increasing use of double-blind studies in therapeutic trials, it has become necessary to define ethical limits. In order to conduct such trials—without inflicting harm upon either the individual or society—the subjects must be informed that the experiment involves the random allocation of two or more treatments (new, accepted or placebo), and be apprised of the relative risks that the trial may incur.*

In recent years, the use of statistics and the emphasis on valid experimental design have become vital aspects of evaluation of new treatment. One particularly important design is that of the double-blind trial.

With the increasing reliance on statistical methods, however, there arose serious debate about whether or not research on humans was justified, and under what conditions.

It is hoped to be shown that free informed consent of each participant in an investigation is a necessary requirement for ethical experimentation, and to describe what information is vital for such consent. After an explanation of the double-blind trial and the reasons for its use, the general arguments for free informed consent will be applied to this particular design, based upon specific comments from the literature.

## The Investigator-Subject Relationship and Free Informed Consent

In order to determine the morality of any given experimental design, one must first answer a more basic question: Is it ethical to conduct research on sick people, and if so, under what conditions? The fact that the medical literature and public opinion often express reservations shows that the answer is, for some, not as clear-cut as it may at first appear. The reason for this lies in misunderstanding the difference between the doctor-patient and subject-investigator relationships.

If one accepts that every person is both an individual and a member of society, and that every person has a moral duty to help others or, at least, not to harm them, then it is easy to see that the doctor-patient and investigator-subject relationships, like therapy and experiment, are the two complementary facets of the medical profession which fulfill these obligations. *Therapy* is a *curative* measure applied on an *individual* basis in a doctor-patient relationship[1]. In such a relationship, the patients always seek out the doctor, not vice-versa[2]. The ineffectiveness of any particular treatment administered by the physician is always considered to be a failure. *The doctor is morally obligated to help his or her patient.*

The doctor also has an obligation to help society—for example, by making known the results of clinical work—but it is inconceivable that a doctor would abandon the "imperfect" obligation to help the patient for the "perfect" obligation not to harm the patient, in order to fulfill the "imperfect" obligation to help society. (This would, however, be imperative if it were otherwise impossible to fulfill the "perfect" obligation to not harm society, because it is obvious that one need not help if a harm will result, and if by not helping, no harm will result).

Why is the abandonment of "imperfect" for "perfect" duties to the patient "inconceivable"? Because this is *exactly* the function of the investigator-subject relationship. *Experiment* is a *preventive* measure applied on a *social* level in an investigator-subject relationship[3]. The investigator always seeks out subjects.[4] The ineffectiveness of any particular treatment administered by the investigator is never considered a failure, because the obligation here is to discover new facts to help society. *The investigator is morally obligated to help society.*

The investigator also has an obligation to help individual subjects, but again, it is inconceivable that an investigator would abandon the "imperfect" obligation to help society for the "perfect" obligation not to harm it, in order to fulfill the "imperfect" obligation to help the subject (again, this would be necessary if it were otherwise impossible to fulfill a "perfect" obligation to not harm the subject); this is because the latter is exactly the function of the doctor-patient relationship. Therefore, the two relationships together fulfill all four obligations, something neither alone

could always accomplish; they are *mutually exclusive*.

Also, it should be clear that the doctor treats the patients while the investigator treats the disease; thus, they are concerned with *two different entities*. The patient is an *end*, while the subject is a *means*. (This statement is reinforced by the fact that experimental designs attempt to eliminate person - to - person differences, so that the disease alone can be considered.) Similarly, empirical research by Gray revealed that the physician-patient and investigator-subject relationships were distinctly different, and that ill persons often had trouble understanding the differences between them:

> ...many potential subjects do not understand the expectation that they will look out for their own interests when presented with the decision to take part in research, nor the fact that researchers have interests that transcend the health or illness of any particular subject.[5]

From these arguements, four conclusions can now be drawn.

1. First, it may be stated that the physician-patient and investigator-subject relationships are sufficiently different that those arguments which make certain behaviour moral in one do not necessarily make it so in the other. In particular, it has been argued that, because it may be morally permissible to administer therapy without the free informed consent of the patient if it is "in his best interests", the same applies in administering unproven treatment for a subject's disease:

> "If there is evidence that a new treatment may be safe and effective, if there is reason to think that it is an improvement on existing ones...there can be no ethical or legal objections against a clinical trial ...and the patient's consent is as unnecessary as if an investigation were carried out on their case records.[6]

Similarly, most ethical codes that distinguish between experiments of potential benefit to the subject and those concerned only with the acquisition of knowledge state that explicit consent need not be obtained in the first type, because explicit consent is not required for therapy and these experiments are essentially therapeutic[7]. This position has been shown to be untenable; while the *results* of an experiment may be therapeutic, this is not the *intent*. The problem concerning whether consent is required arises from confusing motives with results and the doctor-patient relationship with that of investigator and subject. Resolving this establishes informed consent as an absolute in *all* experimentation. This is a direct result of the second, third and fourth conclusions.

2. Experimentation requires using people as means, not ends in themselves. In strictly Kantian terms, to do this without the free informed consent of the subject is to deny the existence of the rational moral nature of man, and thus to be unethical:

> So act as to treat humanity, whether in thine own person or in that of any other, in every case as an end withal, never as a means.[8]

3. The third conclusion is that free informed consent provides the only way for investigators to fulfill their "imperfect" duties to help both society (by advancing knowledge) and the individual—essentially a utilitarian argument. On the social level, this conclusion is reached because "research that violates our ethical sensibilities may eventually poison the atmosphere in which clinical research is done and make successful solicitation of future patients more problematic"[9]. That many people regard the use of subjects in experimentation with discomfort reveals that there is a disapproval of using people as means unless adequate precautions are taken, one of which has been generally agreed to be informed consent[10]. Thus, without such consent, there would be less experimentation, and experimenters would be less able to help society. This also applies on the individual level, because the lack of knowledge which could be gained by experimentation means individuals would be less able to be helped in fighting their illness.

4. Finally, explicit consent provides the only way for investigators to ensure that society will not be harmed:

> Among the inviolable structural values that the requirements of informed consent protects are veracity, freedom and justice...These are values people will die to preseve, values without which social systems and interpersonal relations break down and cannot function.[11]

Therefore, there is no way that the usual consent of a patient can be implied when an individual is entering an investigator-subject relationship.

Having determined that free informed consent is required explicitly in all research, the question arises as to how this requirement may be met, if at all. Free, informed consent consists of three elements: information, comprehension and freedom of choice[12].

That these elements cannot always be provided in practice is widely discussed. There are problems with the "information" component:

> How can one convey 'all' relevant information, especially when the investigator himself cannot predict the course or the outcome of a research situation?[13]

There are problems with the "comprehension" component:

> There is disagreement among physicians and clinical investigators about the extent to which laymen can reasonably be expected to evaluate the advantages and hazards of various treatments...It is unclear how much information, what kind of information, and in what form it should be presented to prospective subjects in order to enable them to assess the risks and merits of the study intelligently.[14]

Finally, there are problems with the "freedom" component, especially when sick persons are used:

> His (i.e. the patient's) physical state psychic attitude, dependent relation to the doctor, the submissive attitude induced by treatment—everything connected with his condition and situation make the sick person inherently less of a sovereign person than the healthy one...[15]

Gray expands on this source of coercion: "...many people have a poor understanding of the peculiar characteristics of the researcher-subject relationship that distinguish it from the usual doctor-patient relationship, and this lack of understanding interferes with the freedom of potential subjects to refuse to participate."[16]

Just because ideal consent may not be possible, however, does not mean that it is ethical to perform experiments without at least trying to get the best consent possible. An explanation of the differences between the subject-investigator and patient-doctor relationships will essentially solve the problem of

coercion. As for the problem of what else must be told, it would seem that, *as a minimum*, the subject has a right to know all the foreseeable risks, and the probability of their occurrence. This can be argued in two ways: first, there is a general backlash against paternalism at this time, and for an investigator to decide which risks the subject ought to be made aware of is to go against public opinion, which would result in less experimentation; and second, should a potential subject decide not to participate because he is unreasonably afraid (the major reason for researchers stating that they need only reveal risks "within reason", "reason" defined by them), this is surely a more ethical event than the decision of a subject to participate based on inadequate information, because the inability of a subject to understand the information given to him would morally exclude his being used in an experiment anyway. Therefore, *all* risks should be revealed, regardless of what other information may be required.

## The Double-Blind Design

In testing the efficacy of a new treatment, an experiment must be devised that will exhibit the differences between the new treatment and other, established treatments or no treatment at all (if none exists). The use of comparable groups of subjects if clearly indicated. Random allocation of subjects to each of the groups distributes experimental error equally, allowing it to be analyzed statistically, and thus not obscuring results. This, however, does not completely eliminate bias:

> ...conscious or unconscious preferences, desires, fear and other psychic forces in the investigator *and* subject...may have either positive or negative influences on the subject, depending upon the investigator's or subject's attitude toward the illness...[17]

(This problem is particularly important because in many experiments the investigator must rely on subjective appraisal by him and/or the subject.)

In order to overcome this, a double-blind design is used. In such an experiment, the various treatments are allocated randomly by the physician-in-charge. Neither the subjec nor the investigators observing them know which treatment any given subject is receiving. With this design, personal error can be assumed to fall at random and all bias is effectively eliminated.

An additional problem arises when a new treatment is to be compared with no treatment at all. It has long been recognized that there is a so-called "placebo effect" associated with all forms of medical intervention; such an effect has been defined as "the psychological, physiological, or psychophysiological effect of any medication or procedure...which is independent of or minimally related to the pharmacologic effects of the medication or to the specific effects of the procedure, and which operates through a psychological mechanism."[18] It should be obvious that there will be a placebo effect with the group receiving the new treatment; corresponding effects will not be noticed, however, with the group receiving no treatment. To remedy this bias, the latter group must be given a therapeutically inert "dummy" or "pure placebo" identical in every way to the new treatment. The placebo then ensures that the control group has the same psychological effects as the group receiving the active treatment. (The placebo, of course, also keeps allocation "blind" to both subject and investigator.)

In summary, there are two kinds of double-blind experiments commonly used: a comparison of a new treatment with placebo when no accepted treatment exists, and a comparison of a new treatment with accepted therapy. A third possibility is the comparison of a new treatment with a placebo when accepted therapy exists. This is rarely done because the aim of therapeutic testing is to ascertain whether or not a new treatment is better than existing ones, and because (as will be seen) many investigators feel that such a design is unethical. However, there are definite problems with using standard therapy as the control in some cases:

> While this method is, on the surface, a good one, there are great practical disadvantages, particularly when the classical five per cent significance limits are applied. Standard therapy naturally has a reasonably high degree of activity. In consequence, unless a very large trial is undertaken it is impossible to achieve statistical significance with a new drug...[19]

These three designs will now be considered in discussing the morality of double-blind experiments.

## Ethics of Double-Blind Designs

Before assessing what details of a double-blind trial subjects must be made aware of, it must first be agreed that they are to be informed that they will, in fact, be participating in an experiment. Although this would seem to be a foregone conclusion, many authors do not concern themselves with the issue of consent; rather, they attempt to justify the type of trial involved (especially double-blind), on the basis of the kind of care delivered:

> It might be...argued that it is wrong to use patients as controls from whom a new treatment is withheld, but this is...untenable because it is not known in advance whether the new treatment will be better than any other.[20]

> If we were to regard placebos, for example, simply as inert substances which deprive a patient of a known treatment, then we could not ethically condone a placebo research group. But experience has shown that placebo groups have fared as well or better than some 'active' groups in drug research. Also, enough controversy still exists about some drugs and the therapeutic claims made for them that a placebo group is essential to justify their use.[21]

> The use of dummies and double-blind trials causes a great deal of heart-searching, most of it needless. The patient is receiving the best orthodox treatment apart from the remedy which is in dispute.[22]

These authors are as confused about the role of the investigator as are the subjects of many experiments, so that it is not surprising that none of them mention a consent requirement. In fact, a concrete example that elimination of consent is unethical is provided by these very writers, because they are concerned about the ethics of comparing a placebo with a new treatment when a recognized therapy exists:

> Once there is good evidence of the value of a drug, however small, the

> drug should, as rule, only be omitted when it is being compared with another drug which is expected to be as good or better. This is to emphasize again that...the patient receives the best orthodox treatment for the disease with the exception only of the disputed remedy...[23]

> If a moderately good standard therapy for a major disease already exists, to conduct a trial with a placebo would probably be ethically objectionable...[29]

However, it was demonstrated that this experiment design can provide worthwhile and important results. Naturally it is immoral to help society while harming the individual, but the argument on which these authors base their conclusion that the design harms the participant—namely, that recognized therapy is denied to all subjects—is hard to understand when they condone the design of new treatment versus standard therapy, in which one-half of all subjects are denied recognized therapy. However, there could be no moral objection to performing such experiments if the subjects consented to being denied therapy; admittedly, there would be very few who would consent, but for the above authors to ignore a consent-requirement is for them to block any possibility of obtaining information, and thus to not fulfill their "imperfect" obligation to help society when individuals are not harmed by doing so.

Having determined that the subject must be informed that an experiment is going to take place, the question then arises as to what aspects of the experiment must be revealed. In particular, must one inform subjects of the double-blind aspect of the trial?

Certainly there is no question that "there may be some studies in which revealing the presence of a placebo group to the subjects would change the circumstances of the design so much as to render the research invalid".[25] Because of this, those authors that do consider a consent-requirement usually state that one need not reveal the double-blind aspect if it will damage results:

> How much to tell and how to convey the information depend on specific circumstances. This may vary from full participation in the actual research to no information in situations where the possession of such information would bias or negate the results.[26]

These authors argue that to tell of the double-blind aspect is to be unable to fulfill an obligation to help society, hence to be unethical. In fact, not to tell would be unethical. This can be proven directly from the more general arguments, stated earlier, which established the need for informed consent, and from the statement (derived from these arguments) that any subject is entitled to know all foreseeable risks.

1. The more general arguments assert that not to tell of the double-blind aspect of experiments is to be immoral because it *harms* society. For example, Bok invokes the 'wedge principle' as a utilitarian argument:

> Deceptive practices, by their very nature, tend to escape the normal restraints of accountability and so can spread more easily. There are many instances in which an innocuous-seeming practice has grown to become a large-scale and more dangerous one; warnings about the 'entering wedge' are often rhetorical devices but may sometimes be justified when there are great pressures to move along the undesirable path and when the safeguards against undesirable developments are insufficient. In this perspective there is a reason for concern about placebos. The safeguards are few or non-existent against a practice that is secretive by its very nature.[27]

A direct result of this is that, while any individual use of the double-blind design without consent is seemingly harmless, it can ultimately prevent further research from taking place because suspicion is aroused when reports of such deceptive practices filter out.

2. The fact that the demands of the double-blind design require that the investigators do not know what treatment any given subject is given introduces an element of risk, because in the case of an emergency it might be necessary to know what treatment a given subject is receiving, and this information would only be directly available to the physician-in-charge. Since this risk is a foreseeable one, the subject has a right to know about it, and hence about the double-blind design. Similarly, the fact that the subject may be receiving an unproven treatment poses foreseeable risks which the subject must be made aware of, as does the fact that placebos can pose a health risk dictate that *their* presence must also be revealed:

> No truly 'pure' placebo really exists ...a placebo effect may not always be beneficial and can be frankly toxic.[28]

Therefore, it can be concluded that every subject in a double-blind experiment must *at least* be told of the different treatments being compared in the trial (including placebo where applicable, and accompanied with information on foreseeable risks from these treatments) and the fact that the investigators do not know what treatment any given subject may receive:

> In the case of most experimental applications, there are ways of avoiding deception without abandoning placebo controls. Subjects can be informed of the nature of the experiment and the fact that placebos will be administered; if they then consent to the experiment, the use of placebos can not be considered surreptitious ...If, on the other hand, there are experiments of such a nature that asking patients for their informed consent to the use of placebos would invalidate the responses...then the experiment ought not to be performed...[29]

(Once again, it should be emphasized that the consent-requirement, while *necessary* for ethical experimentation, may not be *sufficient*.)

In concluding, one might well ask: how serious is the use of placebos in research, or the use of the double-blind design, without consent? Placebos are often regarded with a faint air of amusement, which would seem to place them outside ethical considerations. However, it has been shown that placebos and double-blind designs involve risk to individuals and to society if used often enough, both on utilitarian and deontological grounds; for this reason, informed consent is a moral imperative.

## Conclusion

The initial backlash of the medical profession against the introduction of statistical methods into research was not simply the result of a blow to the

doctor's ego concerning his ability to make accurate scientific observations; rather, it arose from genuine concern about using people as means rather than ends. Now, the use of clinical trials is recognized as being highly ethical because they provide better, more accurate results and thus help society more than do uncontrolled observations.

It is only moral to help society, however, when individuals will not be harmed in the process. In order for scientific knowledge to be advanced from results obtained by double-blind experiments without harming individuals or society, it has been shown that subjects must be informed that the experiment involves random allocation of two or more treatments (new, accepted, or placebo), and that the risks involved with each treatment must be explained□

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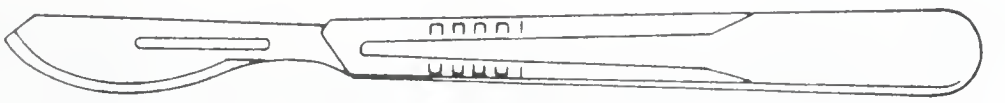

# Does Holistic Medicine Have Anything To Offer?

## Pro:

What does the phrase "holistic medicine" conjure up in your mind? Is it a description of the idealized consideration and treatment of those patients in your office as "whole persons"? Or does it merely refer to a clutch of old/new techniques of "natural" healing, such as biofeedback and herbalistic remedies? "Holistic medicine" is being increasingly used as a catch-all for all sorts of new, unorthodox therapies and diagnostic methods, while still embracing the basic concept of the healthy "whole person".

Holism (from the Greek, *holos*, whole) is a concept which describes the human organism not just as a collection of organ systems, but rather as a whole entity greater than the sum of its component parts. One appreciates all that comprises a human being—the physiological processes, a body to contain, emotions to move, a mind to reason, a spirit to guide— all interacting with environmental and social influences in a complex, multi-dimensional manner. The holistic viewpoint stresses the dynamics and interplay of all these factors.

When one sees a patient, there is a tendency to explain the signs and symptoms of his/her illness on the basis of a single cause (a pathogen, a metablic disorder, etc.)—an example of the "monoetiologic thinking" that is widely prevalent in the practice of specialized medicine. But we should remember that illness is often multifactorial in its etiology and in its course. We could consider the effects of emotional stresses and an unwell psyche, the patient's ability (or failure) to adapt to stress and change, possible "motives" for being sick (could it be to his/her advantage in any way?), and so on. Will it make a difference? In the obvious case, a patient may be healed once the "toxic" influences responsible are removed, but the illness may be chronic, and far more subtle. Merely repairing and restoring the individual's afflicted organs is not enough; removal of the stress factors, and promotion of a positive change in lifestyle, is also needed to prevent a relapse or downhill progression of the illness.

The relationship of emotional stress to the development of peptic ulcers provides a classic example. The aggravating effect of internal conflict and stress, on a background of certain risk factors, predisposes to the development of an ulcer. The incidence and severity of the disease can be modified by factors such as adaptibility, defences against internal conflict, and an

## Con:

Holistic medicine (from the Greek "holos" meaning "whole" or "entire") is an approach to health which is divorced from the current mainstream of medical science. Subspecialties such as chiropractic, homeopathy, naturopathy, acupuncture, kinesiology, etc., are components of the holistic whole. Holism focuses on the well-being of the "whole person" (i.e., person-as-mind-body-spirit). The general public has recently become increasingly impressed with the holistic alternative and this relates directly to the growing popularity and credibility of holism. I suggest that this acceptance is founded on unsound basic beliefs and unrealistic claims propogated by holistic medicine men. Furthermore, the medical profession should take some of the blame for pseudomedicine's rapidly heightening profile.

Objectively speaking, medical science should be the only truly responsible and respectable health discipline. Going for it are the best brains and advancement of knowledge through the scientific method. By comparison, the holistic disciplines draw their practising members from a more limited population who then have to work with touchie-feelie theories which are antiquated at best, and are usually just voodoo-oid shots in the dark. Why, then, is holism so popular?

Several reasons.

First, holistic theory by its nature provides overly simplistic, but somehow satisfying explanations of physical symptoms to the layperson. Medical theory is not so simple, therefore, not so easily grasped or satisfying. This forces the layperson to place his/her trust in the doctor's knowledge and judgement, and necessarily relegates him/her to a subservient, vulnerable position. In holistic practice, the patient feels that he/she is a peer rather than a dependent. In other words, what holistic theory lacks in fact and scientific basis, it makes up for in accessibility and satisfaction for the layperson. It is medicine *for* laypeople *by* laypeople.

Secondly, holism espouses "natural cures" to disease—a concept with intrinsic appeal. It seems somehow less acceptable to pollute one's body with chemicals and drugs to fight disease, when presented instead with a "natural organic" alternative. While most of these organic cures actually work via pharmacologically active, and occasionally specific, chemical agents, their widespread use would represent a

**Pro:** (continued)
ability to cope with stress.

A more specific example illustrates the important role of social and economic factors. A man with a family history of peptic ulcer has just been released from jail for petty offences. Unable to secure a job, abandoned by his friends, rebuffed by his wife, and with his money dwindling away, he embarks on a drinking binge. Subsequently afflicted by a severe, burning epigastric pain, the man ends up in the hospital. The physicians diagnose an ulcer, and the patient recovers with the appropriate treatment, but he becomes sullen and moody at the prospect of discharge from the hospital. To simply discharge him now may well result in the fellow's re-admission to the hospital (or jail) in the near future. The disease was treated, but not the whole person. Here, a good social support structure—in the form of a social worker, a relief agency, and perhaps spiritual guidance from a minister—would provide a "synergistic" healing effect in combination with the proper medical regimen. Most importantly, the patient's cooperation and participation in his own management is required. His health is ultimately his own responsibility. The holistic approach endeavours to make patients active partners in, rather than passive recipients of, complete health care.

Having looked at the whole person, we may ask: what is a healthy, whole person? Health implies not only the absence of disease, but the harmony of the mind, body and spirit. Loss of this harmony may not result in the loss of health, for adaptive mechanisms can come to play. It is at this point that Holistic medicine attempts to deal with the crucial first stage where the patient only has minor discomfort or distress.

Continued or exacerbated strain of these defences, however, break them down, and result in illness. Patients most often present in the doctor's office at the next stage of dysharmony, where the initial signs and symptoms are persistent and/or worsening. Approximately one out of a hundred patients present at the third stage—disease serious enough to warrant hospitalization. Orthodox medicine is primarily concerned with the detection and cure of disease at the latter two stages. But it is possible to control problems by educating the patients about the warning signs. Enlisting their participation is essential to prevent the progression of the dysharmony to more serious stages.

Holistic medicine cannot supplant the sophisticated and precise techniques of diagnosis and therapy available to modern orthodox medicine. But with its emphasis on health promotion, self-care, natural healing, and an overall perspective, holistic medicine *can* be a partner in providing health care. Both approaches can be integrated into a single comprehensive plan for "whole health". □

Pat Gallagher 8T2

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**Con:** (continued)
regression towards medieval medical science and practice. Anyone trying to treat acute diabetic ketoacidosis herbologically, or congestive heart failure nutritionally, or pneumonia organically, would quickly lose his/her patients either directly or indirectly. Holistic medicine can call on medical science if its therapies fail. Medical science's failures have nowhere to go. Terminal illness which miraculously remits under holistic treatment is "cured organically". Terminal illness which miraculously remits under medical treatment "would have gotten better anyway". A terminal patient who dies "holistically" does so because "medical science kept the patient away from the natural cure for too long". A terminal patient who dies "medically" does so because "medical science has failed again".

The third, and probably most important, popularizer of holistic medicine is its placebo effect. A patient with back pain who comes to a chiropractor will, after twelve half-hour sessions of intensive "hands on" contact and reassurances, feel that something has really been done to him/her. He/she feels obliged to get well. The same patient coming to a doctor during a busy day receives brief questioning and examination before being told about "bedrest - heat - and - analgesics - for - three months - and - grin - and - bear - it - good - luck - and - thank - you - very - much - next - patient - please." Understandably he/she feels that little has been done to him/her and that the practitioner has little concern for him/her. The patient has less of an excuse to get better. The art of doing nothing, but doing it with compassion, concern and reassurance, is an art which has been lost by some physicians.

It might seem that I have placed doctors on the next level above *Homo Sapiens*, and that holists are just lay louts. My argument is an elaboration of this establishment viewpoint. However, this line of reasoning does, I believe, have some merit. Holistic theory has little place in acute management and patient care. But, admittedly, the holistic view of patient as a "whole entity" and disease prevention is, in the long term, both sensible and practical. Doctors are well-trained at "band aid" patient care. They are good at looking at an illness as they would look at a microscopic slide: a momentarily frozen cross-section of a longstanding, longitudinally-progressive state-of-being. There is, however, more to the patient than the illness.

Holism is popular among patients because they are *satisfied* with it, for whatever reasons. But, instead of embracing holism as a viable alternative to established medical science, doctors should cut through the holistic chaff, selecting and incorporating into traditional medicine the positive features. These are, I feel, the accessibility of the theories, practice and practitioners. This could be achieved in several ways. First, patient education is essential in attaining understanding, trust, and ultimately, compliance. Second, the physician should descend from the role of knowing all and doing all *for* the patient to a position of working *with* the patient in maintaining or re-attaining health. Finally, in addition to cognitive competence, the physician should demonstrate

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# The 1980 Summer Scholarship Experience

Barry Engelhardt 8T2

*The following article relates some of the medical students' experiences in their 1980 Summer Scholarship positions, and serves to emphasize the numerous and varied opportunities such a program provides.*

The first two years of medical school are oriented towards the basic sciences, with rather limited practical experiences. To afford these students intensive exposure to both clinical and research medicine, Summer Scholarship programs have been established by various charitable organizations: Physicians Services Incorporated (P.S.I.), Medical Research Council (M.R.C.), Medical Alumni Association (M.A.A.), Ontario Heart Foundation, Bradshaw-Errington Fund, Mary Cassidy Fund, James H. Cumming Fund, the Dean's Fund, and CIBA-GEIGY. Of the 95 positions available, 33 are purely research, and the remainder are either purely clinical, or a combination of the two. A Faculty of Medicine committee decides how to equitably award these scholarships among the many more than 95 applicants. Prime consideration is given to students applying for family practice positions (especially in the rural areas), and medical research projects. As well, the committee assures the enthusiasm of both the student and his would-be supervisor, and the structure of the summer program.

## Career Goals

Shortly after beginning medical school, a complacency sets in—*You've made it, you're going to be a doctor!* Students soon realize, however, that before you are handed that cherished degree, many decisions will have to be made—one of the most difficult of which is to choose an ultimate career. But how, exactly, does one intelligently decide which area of medicine to devote a lifetime to? One message that comes through clearly is that the Summer Scholarship program is an excellent aid to developing a realistic career goal.

Bill Harrigan, having spent three months in family practice at Brantford General Hospital under the supervision of Dr. R. Farley, explains: *"The money you (P.S.I.) give is more than a contribution to helping students financially through the next year...it is an opportunity to plan for the future, and make decisions that you are informed about the world of medicine beyond school. This can only serve to better the lives of the students involved, and improve their service to people. Having experienced three months of medicine in a relatively small center, I am quite confident now of my goal to enter family practice in an area of similar population size."*

Students can also delve into various specialties in their search for a suitable career. Working with Drs. Hyland and Ross at Wellesley Hospital afforded John Stimac a concentrated exposure in both cardiology and respirology. As a result, *"...I feel that my interest in the two fields has intensified, and I therefore must consider each of them as definite career possibilites."*

Third year student Normand Carrey worked with Dr. Betty Steiner in the Gender Identity Clinic (one of the few in North America) at the Clarke Institute of Psychiatry. Clinic patients are assessed by a team of psychologists, psychiatrists endocrinologists, and internists. If a patient is diagnosed as transexual, surgery is permitted once the patient meets certain conditions. Norm explains: *"...These are, to live and function in the role of the desired sex for at least two years. This involves a change of name, seeking employment in the desired sex, and cross-dressing in public..."* If there is good adjustment, six-month hormone therapy is followed by corrective surgery. Norm concludes: *"The interaction with the staff, and the continuous guidance and support I received from Dr. Steiner, have only reinforced my burning desire to pursue a career in psychiatry. I am greatly indebted to the M.A.A. for this once-in-a-lifetime opportunity."*

Experiences such as these allow students to learn new information, and solidify previously-acquired knowledge. More importantly, the practical application of these learned sciences, as well as the finer aspects of running a practice and operating in a clinical setting, are appreciated. Luigi Castagna's summer involvement in family practice testifies to this: *"During the program I got an idea of how to combine clinical thoroughness with efficiency. I was exposed to the social and civic role of the physician, and his interaction with the police, courts, insurance agencies, public health, and social workers. This gave me some feeling for ethical guidelines that have to be established for problems of a social or legal nature."*

## New Perspectives

During their summer, students are often fortunate enough to function in situations which they may never experience again from the same perspective, if at all. For example, one student described his program's special structure: "*Living in the hospital was a tremendous advantage, since I could be ready at a moment's notice...Once, I helped a clinical clerk perform CPR on a young infant during the two-hour ambulance ride to Winnipeg...I also attended two intra-uterine fetal transfusions.*"

Kim Plaxton spent twelve weeks in the Sioux Lookout Zone involved in fields such as ENT, pediatrics, and radiology, often via telemedicine and direct exposure to the specialists themselves. Says she: "*For about two months, I travelled to the seven major nursing stations within the zone, spending from two to ten days in each reserve. In addition, I flew to four satellite communities, where clinics were held in schools or nursing cabins. The poorer standard of living, lack of amenities, and extreme isolation in Northern Ontario only became apparent to me through travelling in the reserves.*"

Under a P.S.I. program at Lake of Woods District Hospital in Kenora, David Crookston, relates some social aspects of his summer experience: "*...On the reserves, I saw poverty, alcoholism, and severe disease (especially VD and TB). Worse, however, was the Indians' loss of pride, and confusion at being caught between adapting to our culture and attempting to retain their own.*"

Closer to home, working in pediatrics can have its own social implications, as Simon Iu discovered, during his summer with Dr. Azzopardi at Scarborough General Hospital. "*In addition to the care provided by the doctors and nurses in the hospital setting, I gained valuable insight into how the Children's Aid Society and the public health nurses worked to handle problems arising from the child's home environment.*" Such problems, adds Simon, "*...might vary from overt cases such as the child abuse and negligence, to the more subtle ones...*"

## Clinical and Research Experience

Obviously, then, students gain access to unique and exciting surroundings and challenges, accumulating insights and special skills in the process. Many of these skills they will carry with them, regardless of the path on which they ultimately embark. Examples abound.

Mike Bogart spent last summer in the SHARE (Self-Harm and Assessment, Research and Education) program at Toronto General Hospital. Mike was involved with "*making assessments of short suicide risks and suicidal intent, using specifically designed questionnaires...This opportunity exposed me to a group of very needy people. Interviewing these patients allowed me to a develop communication skills, and a comfortable interviewing style in crisis situations.*"

From a research perspective, Shlomo Tanen says he "*...received instruction from the technicians in the Electron Microscopy laboratory on the preparation of sections and electron micrographs, from the biopsies I obtained from test animals*", while working on a dermatology program at St. Michael's Hospital in Toronto.

Peter Hodes, too, had the opportunity to learn practical procedures. "*Under Dr. Martin, I was permitted to perform several pelvic examinations, do suturing in Emergency, remove a great toenail unassisted, do the dilatation of a D&C; assist Dr. Anand in removal of an ovarian cystadenoma, inspect newborns, and assist a laparotomy with findings.*"

Thus, important scientific and clinical skills can be gained, but just as often, exposure can exist on an emotional level, too.

For David Chan, working with family physician Dr. Niranjan in Cochrane, Ontario, there were "*...many unforgettable moments. One night I was on call, and was awakened at 3:30 in the morning to confirm the death of a patient. And then there was the sight of the first childbirth, the smell from cleaning the bowels in an autopsy, not to mention the great sensation of catching my first 8-lb. pike!*"

## Part of a Health Care Team

A particularly gratifying experience is the responsibility students undertake in caring for patients, and helping their colleagues. Second-year student Mark Sluzar exemplifies this attitude as he states: "*...the grant enabled me to expand my knowledge and skills while giving my services to the community in which I grew up. To be able to help patients, and to learn from them, gave the greatest satisfaction, and stimulated me to an enthusiastic return to school this fall.*"

Many students were involved as members of a health care team—for example, as ambulance attendants. This allowed them to gain a more complete perspective of the total health care system. "*One day, while on the ambulance, we received a call to an accident just outside the city limits...One (victim) was a male with an obvious compound fracture of the femur and facial injuries. The other was a 55-year-old female with difficult breathing and a compound fracture of the ulna. At this point, I felt that the male patient was in the greatest need of help...However, the woman was found to have ten fractured ribs, a pneumothorax, a fractured pelvis, a massive laceration over the knee, and the ulnar fracture. As well, she was in shock. I can't explain the impact this had on me...Happily, she was discharged in good health six weeks later.*"

## Medical Research

Medical research is especially important in contributing to the student's experiences, and hopefully, to society's ultimate benefit. Armed with an M.A.A. scholarship, Sparrow Rabideau continued her investigation into the possible mechanisms for parturition by, for example, "*correlating the appearance of myometrial gap junctions at term with changes in progesterone, estrogen, and prostaglandin levels.*" Working at the McMaster University Medical Centre for several summers, Sparrow has published numerous papers along the way. For many students, however, the Summer Scholarships provide an introduction to research,

with a chance to subsequently publish in a medical journal.

Brian Alpert contributed to many papers written by Dr. A. Gross at Mount Sinai Hospital. He also helped to develop a point system and standard knee protocol for the assessment of osteoarthritis, the basis of an osteotomy study to follow.

Lynne Wilson worked with Dr. P. Olley at the Hospital for Sick Children in cardiolgy research. Her investigation into ventricular function in patients with single left or right ventricles has been submitted to the American College of Cardiology for consideration at the Annual Scientific Session in March, 1981.

## Medicine As A Profession

The most important opportunity the Summer Scholarships provide is for students to gain a true "feel" for medicine—to be installed with a devotion to the humanitarianism that this profession exemplifies. Christopher Forrest shares his feelings about the time spent in the Brantford Clinic with Dr. D.S. Robertson: "*Perhaps the most valuable item I have picked up is an appreciation for the medical profession. Having seen the skill involved in removing a gallbladder, or the way in which a patient is handled in the office, I realize how much of an art medicine still is.*"

As doctors-in-the-making, medical students are so often besieged by medical fact after medical fact, that their sensitivity and appreciation for the patients they see may suffer. The Summer Scholarships allow the students to revitalize their spirits with the deeper level of caring and understanding embodied in being a good physician.

Perhaps echoing the thoughts of many others, one medical student wrote: "*Most of all, though, I learned something of the honest, firm compassion needed to properly help the raison d'etre of our profession - the patient!*"□

(continued from page 55)

## Acknowledgement

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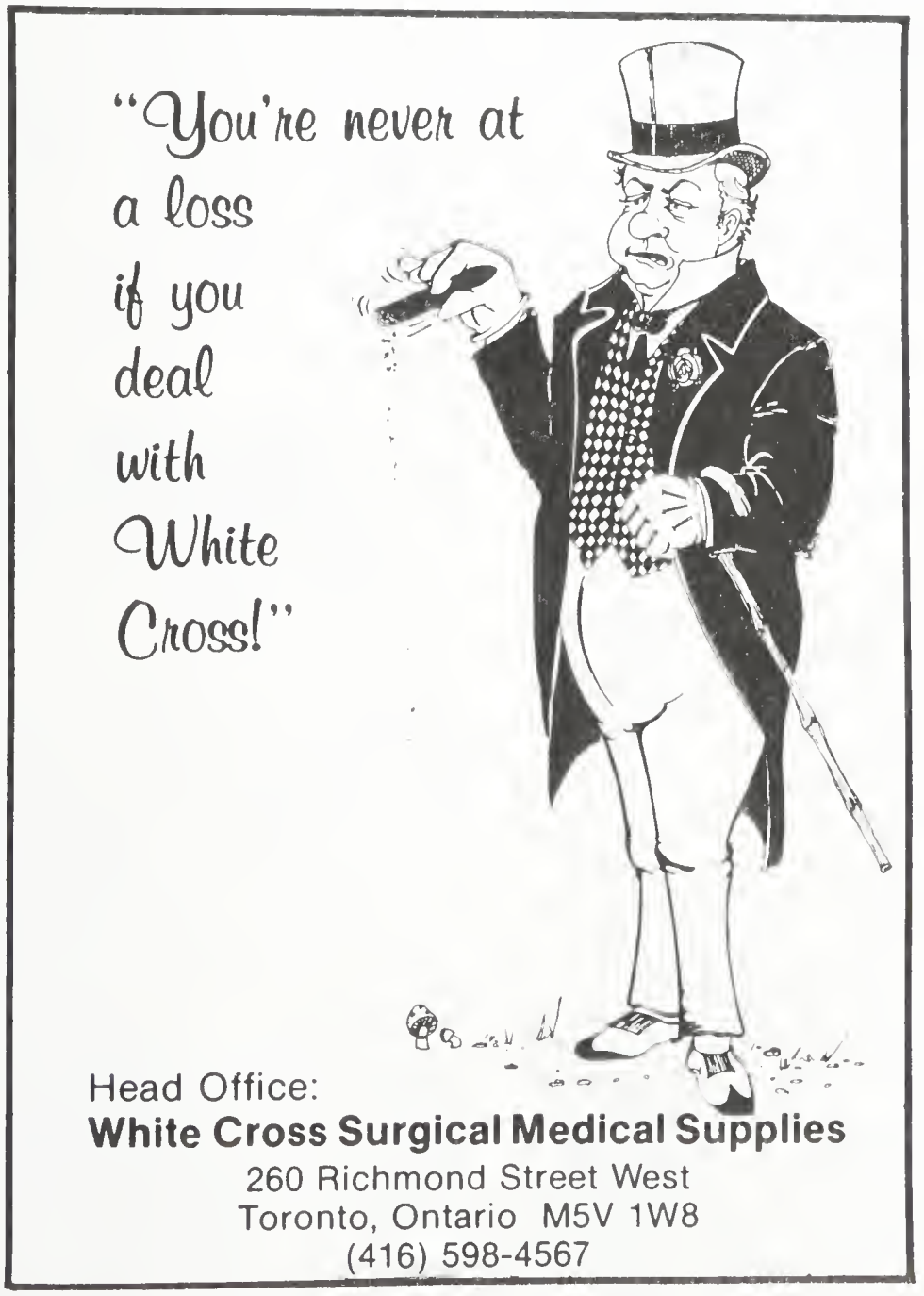
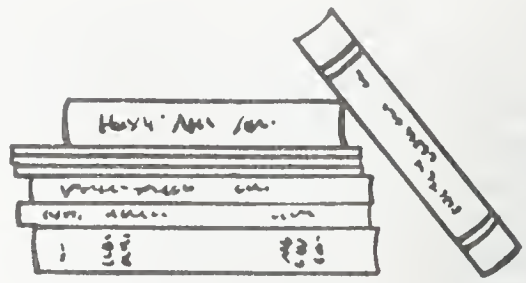


# Book Review



## The Martin Luther Of Medicine

Alexandra Berezowskyj 8T2

### Confessions of a Medical Heretic

by Robert Mendelsohn M.D.
(Warner Books, $2.75, approx. 300pp.)

"I do not believe in Modern Medicine. I am a medical heretic." "The greatest threat to your health is the doctor who practices Modern Medicine." This is how Dr. Robert S. Mendelsohn—Chairman of the Medical Licensing Committee for the State of Illinois, Associate Professor of Preventive Medicine and Community Health in the School of Medicine of the University of Illinois—introduces himself to the reader. In his crusade to convert us all to heretics, the author relies throughout on catchy slogans, beginning with the cover. Stealing a page out of the Surgeon General's book, the cover bears the familiar rectangularly-enclosed message of caution - only this one reads: *Medicine as practiced in America today may be dangerous to your health*. One wonders if the Canadian release should not carry an additional sentence: *Avoid all contact with doctors*.

In keeping with this view of himself as a heretic, Dr. Mendelsohn develops his theory on the state of medical practice by comparing it to a religion. He proposes that the "Church of Modern Medicine" must rely on the blind faith of patients for its survival, since it cannot justify its procedures based on scientific, objective criteria. The Church of Modern Medicine is described as an idolatrous religion, holding sacred mechanical processes rather than living things. It is run by the "high priest" doctors who gather the faithful to "worship" in the "temple" of the hospital which houses the "tabernacle of the operating room". With their "religious badges" (stethoscopes) for identification, these "high priests" roam the temple extracting "confessions" (medical histories) and administering "penance" in the form of medication or surgery. No church member can remain in the fold without receiving the four "holy waters" silver nitrate for gonorrhea, IV fluids, routine immunization and fluoridation of water supplies—or the "sacramental host", drugs. For inspiration, members of the Church turn to their bible - the Physician's Desk Reference and pray in the language of Modern Medicine - that of numbers and statistics. When called upon, they perform the supreme "sacrifice" - death in the ICU.

Dr. Mendelsohn tackles the false teachings of the Church of Modern Medicine one by one in chapters with such inspirational titles as "The Temples of Doom", "Holy War on the Family" and "Doctor Death", to name a few. Let it not be said of the author that he fails to capture the readers' attention. With opening statements such as "If you were set on destroying the family, you couldn't do a better job than Modern Medicine", each chapter invites the reader to press on for more astounding revelations. The book is aimed at the general public, that supposedly innocent and gullible mass that the author feels he must protect from the clutches of the "Devil's priests". He tells them such things as "What's at stake is the whole ball game, the whole ninety percent or more of Modern Medicine that we don't need, that as a matter of fact is out to kill us", or "Doctors turn out to be dishonest, corrupt, unethical, sick, poorly educated and downright stupid more often than the rest of society", or "Although insulin is turning up in scientific studies as one of the causes of diabetic blindness, its use is still heralded as a medical miracle". These quotes are by no means the most outrageous, nor does reading them in context make them sound any less absurd. For the most part, the book is written in this tone to the point where one wonders whether the author could possibly be serious, or whether he is merely making these statements for their shock value. Is it possible that an entire book be written tongue-in-cheek? If not, then one must conclude that Dr. Mendelsohn believes there is virtually no such thing as true illness, that it is mostly iatrogenic: part of a conspiracy to "destroy our bodies, our families, our communities, and our world".

What is unfortunate about the book is that in his eagerness to expose the wrongdoing of the Church of Modern Medicine, the author has become a member of the ever-growing cult of "doctor-bashing". By making so many narrow-minded and inflammatory statements, he draws attention away

from certain valid issues which he raises. Those who would benefit most from consideration of these issues are also those who are the most likely to ignore them because of their absurd presentation. One could call this a case of not being able to see the forest for the forest fire (rather than the trees), the fire being that of burning anger.

After recovering from his barrage and sifting through the rhetoric, one can find many areas which warrant the attention of, and reflection by, the medical profession as a whole, and even more so by physicians as individuals. Dr. Mendelsohn discusses the drug industry's influential role in determining the prescription of habits of doctors, touching on the problems of over-prescription of certain drugs, and the questionable validity of an alarming proportion of clinical trials. This latter claim is one of only two in the entire book which he backs up with a reference. Perhaps it gives him pleasure to quote, from the *Journal of the American Medical Association* no less, a study which puts medical research in a bad light. Nevertheless, the author makes a particularly incisive point in rebuttal to the often-heard argument that it is the patients' demands for treatment which pressure the doctor into prescribing, say, penicillin for the common cold. He says, "Patients demand a lot of things such as more considerate care, more natural healing techniques, and discussion of alternatives - and doctors rarely give in on those issues". This brings us to another major focus of the book - the inadequacies of the doctor-patient relationship. Dr. Mendelsohn describes how patients are too frequently treated with lack of compassion, and how "we expect the kids to act like super adults in the hospital and to adjust to the separation and the fear - while we expect the adults to adjust to being treated like helpless children". On the subject of surgery (which he feels is unnecessary in 90% of cases), Dr. Mendelsohn puts forth the theory that it has led people to shift responsibility for their own health onto doctors' shoulders, by assuming that the surgeons "can fix you if you go wrong".

*Confessions of a Medical Heretic* ends with the author's description of his formula for "The New Medicine". Its students will return to the old motto of "First, Do Not Harm". By assuming that the present medical system does nothing but harm, Dr. Mendelsohn ignores a time-honoured truth. As in most situations, the reality is most likely somewhere in between the two extremes. □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CAN CANCER BE BEATEN?
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# An International Conference: The Future of Undergraduate Psychiatric Education

On September 29, 1980, the Department of Psychiatry of the University of Toronto, in cooperation with the coordinators of undergraduate psychiatric teaching in Canadian medical schools, hosted *An International Conference: The Future of Undergraduate Psychiatric Education*. The conference was chaired by Dr. George Voineskos, staff psychiatrist at Toronto's Clarke Institute of Psychiatry, and Associate Professor and Director of the undergraduate programme in the Faculty of Medicine, University of Toronto.

During the conference, the participants were evidently conscious of the unpopular image with which many medical students reputedly view Psychiatry, a view likely derived from unsatisfactory undergraduate learning experiences. It may be noted, however, that student criticism reflects concern about the overall quality of medical education, rather than being directed solely against Psychiatry. Equally obvious, moreover, was the genuine interest, expressed at the conference, in improving the quality of undergraduate education. That these educators in Psychiatry are indeed listening to the students, identifying problem areas, and exploring possible solutions, is both welcome, and necessary. (After all, if psychiatrists, of all people, won't listen, who will?)

Dr. F.H. Lowy (Dean of the Faculty of Medicine, University of Toronto), in making introductory remarks, stressed the importance of a solid grounding in Psychiatry during the undergraduate years of the future physician—no matter what his or her specialty, psychiatric care will constitute an important part of that physician's practice. Dean Lowy proposed two possible directions for future undergraduate education. Teaching could be restricted to "syndrome psychiatry" only, with the teaching of psychosocial aspects of health/illness left to the behavioural scientists; alternatively, both areas could be taught to the medical student, with teaching being particularly improved in the psychosocial area.

In his presentation, Dr. Vivian Rakoff (Chairman of the Department of Psychiatry, Faculty of Medicine, University of Toronto) supported the concept of psychiatrist as teacher of both areas, suggesting that a clinician, rather than a behavioural scientists, would more appropriately serve as a teacher and a valid role model for medical students. On the other hand, few clinicians instill into their teaching of clinically relevant knowledge any significant quantity of behavioural science concepts.

Dr. John Waldron (Professor and Head of the Department of Psychiatry, Faculty of Medicine, Queen's University) then posed the question as to whether the goal of the psychiatric clinician was to teach interviewing techniques or communication skills. The decision would presumably depend on whether syndrome psychiatry or psychosocial medicine were taught.

Dr. H. Walton (Professor of Psychiatry, Faculty of Medicine, University of Edinburgh) wondered whether psychiatric theory ought to be presented to the undergraduate student. As individual psychiatrists have different preferences and ideological allegiances, students could be bombarded with conflicting theories and opinions.

Dr. Hilliard Jason (Director, National Centre for Faculty Development in the Health Professions and Professor of Psychiatry, University of Miami) advocated the small clinic group setting as the ideal learning situation, allowing the student to practise his or her skills, receive feedback, and make mistakes without fear of repercussions. Dr. Jason noted that this group setting, however, could be transformed into an ineffective lecture, or into a manipulative or fearful experience for the student.

Ms. Christine McGuire (Professor of Medical Education, College of Medicine, University of Illinois) discussed methods of evaluating students' achievements in Psychiatry. Again, without having decided on what is to be taught or how, evaluation of the students' progress cannot be defined.

The conference left the rather blatant impression that one motive behind the discussions on upgrading undergraduate psychiatric education was the desire to recruit medical students into the ranks of Psychiatry. One wonders whether residency spots are not being filled, or whether the profession still has not secured complete acceptance or legitimacy in the eyes of the medical community at large. Or could it be, as was suggested by Dr. Carol Nadelson (Director, Department of Psychiatry, Tufts University School of Medicine), that one little expects the medical student, preselected for his or her scientific prowess, to become the socially-skilled humanist that identifies the ideal psychiatrist? At the very least, an improved undergraduate experience would be the accordant, germane step to increasing an awareness and appreciation of Psychiatry by the medical student. □

M. Thompson 8T2

## Editorial

(continued from page 35)

statement, Dr. Wilson asserted that, while the CMA supports Medicare insurance, the Association believes that a patient should "pay part of the cost of medical services he receives", and thus "retain some direct responsibility." A system that permits opting-out, the CMA also contends, allows "the physician to serve as the patient's personal advocate, free to criticize on his patient's behalf the deficiencies of governmental policies"; moreover, "it allows the patient more freedom to decide how much of his personal resources he will spend on health care."

Invoking the spectre of a potential Orwellian nightmare of total State control over medicine, Ontario Medical Association President Robert MacMillan alleged that Mr. Hall's proposals "could imperil patient care by forcing physicians to practise in a manner that might contravene accepted medical practice." Warned Dr. MacMillan: "A profession captive to government in a monetary sense might well become captive in a clinical sense," adding that "being in the civil service" might stifle physicians' attempts to criticize the government.

The CMA and the OMA have thus voiced deep-seated philosophical objections to any mechanism which compels doctors to practise within Medicare. (As for economic objections, the CMA concedes that: "Mr. Hall's proposals could result in considerable financial benefits to the profession.") But if a physician opts out, and re-establishes a "direct physician-patient relationship", he is assuming "provider control" over the costs of his services. Government-profession fee negotiations are bypassed, so the physician alone determines the price patients must pay. It is spurious to suggest that a patient thus has "freedom" to decide how much he/she will spend, since the patient has no leverage against having to pay more (unless he/she pleads poverty, or gives up seeing that physician). It is also hard to see how Mr. Hall's proposals would restrict physicians' freedom of advocacy.

Mr. Hall denies any claim (such as that made by the OMA) that his proposals "amount to total conscription of the profession", maintaining that the profession negotiates a contract (requiring *consensus ad idem* by all parties) with the government. With binding arbitration, the government would not be an unopposed paymaster of the profession. Nor does prohibiting extra-billing make physicians state employees, says Dr. Augustin Roy, President of the Professional Corporation of Physicians of Quebec. "That is only true if you have defined work hours, and someone to report to." Almost all physicians are self-employed, fee-for-service practitioners of a profession that has its own policing body, the College of Physicians and Surgeons. Still, it is difficult to allay the Medical Associations' alarm at their perception of the "thin edge of the wedge" of increasing government encroachment on the practice of medicine.

Many physicians are rankled by the clumsy administration of remuneration by OHIP (a process which the Ontario Government can easily streamline). Some doctors believe that, in view of their skills, responsibilities, and hours worked, physicians are genuinely underpaid for their services. Others harbour an instinctive libertarian revulsion at being subject in any way to the dictums of the State. Physician discontent *is* evident. In 1979, over 600 physicians (about one-third of Canada's annual graduating class) moved to the United States, where flourishes a system that dispenses health care of wide disparity in quality to the different socio-economic strata.

Meanwhile at home, the battle lines are being drawn. OMA President MacMillan has urged that the Association be put on "war alert". Fearing government action on Mr. Hall's recommendations, the CMA has called for an exploration of "the potential benefits of unionization", including "overtime, weekend and holiday service, indexed pensions, standardized working conditions and grievance procedures." At least in Ontario, however, time is on the profession's side. The Conservative Government has expressed its dislike for compulsory binding arbitration, since it puts health expenditures, in part, beyond Cabinet control. Assuring physicians of their right to opt out, the Government has maintained that the level of health care in Ontario is still blissfully acceptable.

In the beginning of the Report, Mr. Hall stressed that, "I found no one, not any Government or individual, not the Medical Profession, nor any organization, not in favour of Medicare. . . The nation-wide demand for Medicare is an accepted fact." Granted this, and granted, from the physician's point of view, denial of the right to extra-bill impinges on some of his/her "economic freedom". But while society should continue to recognize the special role of physicians, and provide just compensation for their services, the national standards of Medicare (including equal accessibility for all) must be ensured. Mr. Hall's proposals ought to be favourably considered by all parties in the continuing debate over upholding the high standards of Medicare. □

*Robert Jin* 8T2

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## Con:

affective effectiveness. The doctor should be empathetic rather than emotionally pathetic, socially deft rather than bereft, behaviourally adept rather than inept.

The main role of holistic medicince should be to help traditional medicine clean up its act. Holistic medicine, as practised today, is laden with mysticism, outdated knowledge, and just plain crock. While fields such as acupuncture, nutrition, and chiropractic have had limited success, and probably have an infinitesimal role in the general health-scheme, such disciplines as iridology , radiesthesia, astrology, aeriontherapy, macrobiotics, and palmistry smack of fadism and even tend to commercialism. On the whole, holism can be dangerous if it is taken too seriously and used indiscriminately. But something about the holistic disciplines keeps the public coming back and is making government agencies stand up and take notice. Members of the medical profession would be well-advised to become familiar with the appealing features of holistic medicine, and utilize them to re-establish traditional medicine as the only serious, reasonable, scientifically-based and reliable, health care alternative. □

Robert Hegele 8T1